

THE
BOMBAY ENGINEERS' REPORT

FOR THE
OFFICIAL YEAR 1849-50;

COMPRISING

EXTRACTS FROM A LETTER FROM THE MILITARY BOARD, AND
FROM A LETTER FROM THE SUPERINTENDENT
OF ROADS AND TANKS;

ALSO REPORTS FROM

MAJOR W. B. GOODFELLOW, CAPTAINS W. D. GRAHAM, J. H. G.
CRAWFORD, C. W. TREMENHEERE, P. L. HART, AND
LIEUT. H. W. B. BELL.



Bombay:
PRINTED FOR GOVERNMENT
AT THE
BOMBAY EDUCATION SOCIETY'S PRESS.

1852.

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on 10 January, 2019

*Extract, paras 7 to 11, of a Letter from the Military Board,
No. 625, dated 31st July 1851.*

7. Adverting to paragraph 40 of the Report, we believe that the late Major Peat, in stating that a road, the wear and tear of which amounted to four inches in depth of metal in one year, had its wear reduced to half an inch by a bottoming of rubble stone, refers to evidence quoted in page 151 of Parnell's Treatise on Roads. The expression therein used is, "I found four inches gone." There being no stone bottoming, the stone had sunk into the clay soil; when the soil is favorable, and kept dry, we are rather of opinion that an uniform bottoming of such soil, sand for instance, or other homogeneous softish material, saves the wear greatly, and will give a truer and smoother surface to the road. All that McAdam insists on is that the sub-stratum be kept dry, and this is the difficulty, because, till the metalling be consolidated, it will not form a coating impervious to wet. The Chief Engineer assures us, from his own experience, that an absolutely unyielding foundation, formed entirely of hard stone, will prevent the metal above it from consolidating.

8. We are inclined to think that in black soil a layer of rubble stone under the metal may be useful, though not absolutely necessary, if the metalling be made thick enough. A metal coat, twelve inches thick, without bottoming, would be preferable to a coat six or seven inches thick, with a bottoming of rubble stone.

9. In paragraph 64, in writing of raised roads, Captain Graham remarks that a rubble pavement, with three inches of metal on it, is preferable to an earthen embankment with six inches of metal; and he adds that a raised road, without a foundation of rubble stone, never runs light; but we must

observe, 1st, That six inches of metal are not a sufficient thickness over an embankment—McAdam's minimum is ten inches; 2nd, In the course of time, and with a coating of proper thickness over it, the embankment will become consolidated, and remain dry during wet weather, and carriages will then run light over it; 3rd, That a bottoming, or pavement of rubble, with three inches only of metal, would not stand; the rubble stones would constantly work up to the top, especially in dry weather; 4th, Where the bottoming is entirely of rubble to a great depth, without any soft bottoming below, the metal on the top will not consolidate, although a road of this sort ought, according to Parnell's Treatise, to be perfect; the metalling will be in constant motion, and will become rolled like shingle. This was the case with the Colaba Causeway, although plentifully watered, and it was only remedied by repeated coats of sand-stone, in which the metalling was at length buried and at rest.

10. A portion of new road adjoining the Colaba Causeway, on the Esplanade, metalled in the same manner, and at the same time, on a bottoming of a sea sand, remained undisturbed, and formed a smooth hard surface.

11. Captain Graham appears to think that the Bombay roads are laid without a stone bottoming. All the main roads are bottomed with rubble, and the result does not appear to us altogether favorable, for they are often rough, and worn in holes. The road from Back Bay to Malabar Hill is an exception, and is a fair example of the faults and advantages of this system; here there was no stone bottoming, and the embankment being on the side of a hill, exposed to a heavy fall of water during the monsoon, gave way considerably, and in some places slipped. The first coating was also too thin, and did not sufficiently protect the embankment beneath it; nevertheless, in parts the original metalling may be seen to this day, after twenty years' service, showing that the wear of surface on a road of this sort cannot be very great. The original cost was of course smaller than if the embankment had been

formed of stone, and we think the surface is more smooth and uniform.

Extract paras. 39 to 40, and 42 and 43 and 64 of a letter from the Superintendent of Roads and Tanks No. 856, dated 3rd April 1851.

39. The Akoordee Road, commencing at the Dapooree Bridge, was in very good repair in the month of December 1849, but, the traffic increasing, it became dreadfully broken up during the hot weather, and on the 1st of June last it was so bad that it was quite dangerous for carriages to pass over it. It consequently became necessary to apply for a separate sanction to repair it; this has been done, and it is in very good order at present, but I much fear that it will get cut up again in the hot weather.

40. Raised roads, such as this is, (more especially over black soil,) should always have a foundation or bottoming of rubble stone. Major Peat states in one of his reports that the wear and tear of a road in England was found to amount in the course of the year to four inches of metal, and even then it could not be kept in good order, when a bottoming of rubble stone was laid down, and the wear and tear was reduced to half an inch only of metal. At the expiration of the present season I shall be better able to judge whether there is a necessity for recommending this alteration. I am in hopes, however, that it will not be required, as the road is being widened from 20 to 25 feet, and the wear and tear from cart traffic will be thus diffused over a greater surface, and consequently there is a greater chance of its not getting into bad order.

42. The retaining walls to the approaches of the Dapooree Bridge, which were built of dry stone, were found to have settled slightly, with some appearance of their giving way, whilst the wooden railing at each end was a constant source of annoyance, for ever being as it was repaired, and as often

being knocked down again. To avoid the expense of building masonry retaining walls, it was determined to try the experiment of throwing up a broad mound of earth on each side, by way of protection to the road, and doing away with the railing : this has been done ; trees have been planted every 25 feet apart, and when they have grown up they will form an avenue, which will tend greatly to improve the appearance of the bridge, whilst all fear of accidents occurring has been prevented. The estimated cost of the alteration came to Rupees 2,250-0-0, which far exceeds the sum that has been expended.

43. The above idea was taken from some little protection mounds of earth which Lieut. Chapman had raised along the upper portion of the Thull Ghaut Road, to save the expense of building parapet walls, and the plan has answered so excessively well at the Dapooree Bridge, and is so much cheaper than retaining walls, whilst it adds greatly to the appearance of an approach to a bridge, that I cannot recommend it too strongly to my brother Officers for adoption, as I am sure it will be approved of. I should here add, that if the above plan had been carried out to the Shikrapore Bridge, instead of building masonry walls, a saving of from three to four thousand rupees would have been effected ; the idea, however, was not hit on until after the masonry walls had been begun, when the design could not be altered.

64. There are two methods in practice of constructing a raised road over rice fields. One is that of allowing the embankment to settle one or two monsoons, and then laying six inches of metal on it, as the roads in Bombay are made. The other is that of laying down a rubble pavement, or bottoming, on which about three inches of metal is laid. The latter is in my opinion the preferable method of the two, as a raised road, without a foundation of rubble stone, never runs light, and, during the monsoon, it is always heavy. This accounts for carriages going the old or upper road from Tannah to Coorla during the rains, and also for the Akoordee Road being in such bad order.

STATEMENT OF EXPENDITURE

In the construction and repairs of Public Works in the Road and Tank Department, from the 1st of May 1849 to the 30th of April 1850.

Camp Nassick, 3rd April 1851.

Names of Works.	Amount.	Total.
<i>Works connected with the communication of the Country.</i>	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>
Bridging, draining, and metalling the new Akoordee Road	1,785 9 4	
Annual repairs to cross roads in the Poona Collectorate, for 1848-49	1,154 0 3	
Rolling mail road from Poona to Khopolee, for 1848-49	41 8 5	
Annual repairs to mail road from Poona to Khopolee, 1848-49	4,812 5 10	
Annual repairs to bridges and drains on mail road from Poona to Khopolee, 1848-49	9 8 0	
Annual repairs to roads, bridges, &c. in the Poona Collectorate, 1848-49	739 0 9	
Ditto to flying bridges at Khurradee, Koregaum, and Seroor, 1849-50	983 1 2	
Ditto to roads, bridges, &c. in the Poona Collectorate, for 1849-50	7,906 10 2	
Ditto to mail road from Poona to Khopolee, for 1849-50	8,046 5 1	
Ditto to cross roads, Poona Collectorate, for 1849-50	4,231 8 10	
Rolling mail road from Poona to Khopolee, for 1849-50	417 15 11	
Annual repairs to Moosee flying bridge, for 1849-50	188 0 0	
Ditto to fair-weather roads, for 1849-50	316 0 0	
Making road-way for cattle	45 0 0	
Constructing a branch road from Dapoorie Bridge to Government House	697 0 0	
Constructing new ferry boats at Bheema and Bheema Rivers	627 0 0	
Constructing a ferry boat at Kulumb	1,237 0 0	
Constructing Shickrapoor approaches	5,895 0 1	
Supporting and strengthening the retaining walls at each end of the Dapoorie Bridge.	91 11 9	
Making stone rollers	1,020 0 0	
Carried forward, Rupees	40,244 5 7	

Names of Works.	Amount.			Total.		
	<i>Rs.</i>	<i>a.</i>	<i>p.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Brought forward, Rupees	40,244	5	7			
Repairs to Neera Bridge	27	0	0			
Annual repairs to roads, bridges, &c. in the Ahmednuggur Collectorate, for 1848-49..	470	3	1			
Ditto ditto for 1849-50..	3,948	3	2			
Constructing a new line of road from Poona to Patus	46,008	4	3			
Annual repairs to roads from Patus to Indapoor, for 1849-50	2,766	4	6			
Clearing bullock track over the Deewah Ghaut.	229	1	4			
Widening and improving the approaches to the Wanowree Bridge	183	10	3			
Annual repairs to bridges on Nagpoor dawk line, for 1849-50.	4,265	0	9			
Maintenance of ferry-men and haulers	3,724	8	1			
New works	4,667	10	5			
Amount paid to the Military Paymaster, P. D. A., on account of hempen ropes received from the Principal Commissary of Ordnance	657	15	9			
Petty repairs to shed for the Godavery River.	7	1	0			
Annual repairs to bridges, for 1850-51	749	0	0			
New Works	686	4	0			
Constructing Thull Ghaut, experimental portions.	59	9	8			
Ditto ditto new road	26,382	3	6			
Improvement of ditto ditto	5,038	12	4			
Annual repairs to main road from Thull Ghaut to Chandore, for 1846-47	25	10	8			
Ditto ditto for 1849-50.	13,294	15	5			
Ditto experimental portions, for 1849-50..	405	0	0			
Petty repairs	166	11	4			
Annual repairs to Sinnur and Pimpree Cross Roads, for 1843-44.	19	14	6			
Ditto ditto for 1849-50..	1,772	0	3			
Annual repairs connecting road between the camp and town of Nassick, for 1849-50....	153	14	8			
Building a dip across a nullah on the connecting road between camp and town of Nassick	234	0	0			
Constructing a bridge over the Pharashem River	4,566	3	1			
Building bridges over the two nullahs, one between Kadoo River and Pimpulgaum, and another near Konkungaum, on the main road between Nassick and Chandore.	1,041	0	6			
Improving the Agra line of road between the Thull Ghaut and Chandore	4,827	0	10			
Annual repairs to bridges and drains, for 1849-50.	130	13	3			
Carried forward, Rupees	1,66,842	6	2			

Names of Works.	Amount.			Total.		
	<i>Rs.</i>	<i>a.</i>	<i>p.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Brought forward, Rupees	1,66,842	6	2			
Petty repairs....	2	2	8			
Ditto to the Sinnur cross-road	65	0	0			
Annual repairs to ferry boats, for 1849-50....	227	14	8			
Petty works to ferry boats, 1849-50.	17	15	8			
Petty charges, ditto	29	1	9			
Annual repairs to mail road from Panwell to Khopolee, for 1848-49.	1,734	14	0			
Ditto to bridges and drains, on road from Panwell to Khopolee, for 1848-49.	85	8	5			
Ditto to main road from Nagotnah to Mahableshwur, for 1848-49. ..	543	13	5			
Constructing Nudhel Bridge, on mail road from Panwell to Khopolee	228	4	10			
Annual repairs to mail road from Panwell to Khopolee, 1849-50... ..	6,206	4	2			
Ditto from Nagotnah to Mahableshwur, 1849-50. ..	4,251	2	8			
Ditto to cross roads, Northern Conkan..	3,195	6	0			
Ditto to cross roads, Southern do.	1,102	5	11			
Petty repairs....	467	11	5			
Annual repairs to main road from Sion Causeway to Colsette Ferry, for 1848-49.	1,027	8	0			
Ditto to main road from Bandora to Gorebunder for 1848-49.....	1,586	8	0			
Ditto to main road from Trombay to Sion Causeway, for 1848-49.	199	12	0			
Ditto to branch road from Chemboor to Mhoul boundary, for 1848-49. ..	41	8	0			
Constructing a new road leading to the Hill of Senhora DeMonte, at Bandora..	7,775	6	0			
Completing the Bhandoop road, and repairing the damage done to it during the last two seasons.	12,462	7	5			
Annual repairs to roads in Salsette, for 1849-50..	9,459	15	0			
Repairing certain works on the Sunky and Ghorebunder roads	84	15	10			
Repairing the double boat plying between Tanna and Kulwa ..	356	0	0			
Renewing the deck planking of horse boat stationed at Ghorebunder	141	4	3			
Repairing the foundation of the Dysur Bridge.	34	2	11			
Constructing new horse boat for the Dantewra Ferry ..	1,335	10	6			
Constructing two new boats for the use of the Colsette Ferry..	647	8	0			
Constructing new line of road between Kussara and Khurdee..	83,790	0	2			
Annual repairs to main roads from Colsette Ferry to Thull Ghaut, for 1849-50.	9,471	3	4			
Carried forward, Rupees	3,13,413	13	2			

Names of Works.	Amount.			Total.		
	<i>Rs.</i>	<i>a.</i>	<i>p.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Brought forward, Rupees	3,13,413	13	2			
Extra repairs to the main roads from Colsette Ferry to Thull Ghaut, for 1849-50.	2,238	3	6			
Annual repairs to road in the Cantonment at Bhewndy, for 1849-50	58	0	6			
Repairing teak wood railing of the Gokherwa Bridge	9	4	9			
Constructing a bridge over a nullah between Bhewndy and Nizampoor	1,497	12	5			
				3,17,217	2	4
<i>Tanks, Wells, and Bunds.</i>						
Building a well at Egutpoora	457	9	5			
Repairing a well at Jhulegaum	50	0	0			
Building a water-course and small reservoir for the water of a spring	31	8	0			
Repairing bundaraha at Salpoor, Musrool, and Kursool	1,034	3	7			
Improvement and repairs to Wuddalla Tank at Panwell	58	0	0			
Clearing and effecting certain improvements to the Tank at Colsette..	1,814	0	6			
Clearing the wells in the Lines at Tanna	50	5	11			
Improving the tank at Khurdee	384	6	9			
Constructing a well at Kussara, close to the bridge	686	8	10			
Excavating a well at Kussara	30	8	2			
Constructing a dam across the Rutonda River. Building facing to prevent leakage to the bund of the Kussara Tank	3,971	7	3			
Facing on the inner side of the bund of the Kussara Tank	99	12	0			
Clearing out the Kussara Tank	172	4	6			
Painting a portion of the bund of the Kussara Tank	38	0	0			
	44	12	9			
				8,923	7	8
<i>Buildings.</i>						
Constructing new pendalls on Bombay road, above the Ghaut	1,522	2	3			
Constructing cook rooms and platforms to four staging pendalls, on the Ghaut	3,120	0	0			
Constructing Mamledar's Cutcherry at Khurkalla	2,168	0	0			
Constructing Moonsiff's Court House at Wurgaum	1,429	0	0			
Constructing new travellers' bungalow at Wurgaum	414	0	0			
Repairs to Phoolshair Palace	1,038	10	11			
Making certain additions to the Poona travellers' bungalow	180	0	0			
Carried forward, Rupees	9,871	13	2	3,26,140	9	0

Names of Works.	Amount.			Total.		
	<i>Rs.</i>	<i>a.</i>	<i>p.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Brought forward, Rupees	9,871	13	2	3,26,140	9	0
Annual repairs to travellers' bungalows, Poona						
Collectorate, for 1848-49.	105	3	9			
Ditto for 1849-50.	1,075	12	3			
Ditto Ahmednuggur, for 1848-49.	126	0	0			
Ditto ditto for 1849-50.	833	7	3			
Building a travellers' bungalow at Patas	1,890	10	4			
Annual repairs to travellers' bungalows and dhurmsallas in the Nassick Sub-Collectorate, for 1849-50.	349	12	8			
Petty repairs to ditto ditto, for 1849-50.	346	0	3			
Annual repairs to military buildings at Nassick, for 1849-50.	57	9	7			
Petty works to ditto, for 1849-50.	46	4	4			
Petty repairs to ditto, for 1849-50.	15	9	3			
Repairs to civil jail at Nassick ..	159	6	2			
Making certain necessary repairs and improvements to the criminal jail at Nassick.	203	8	3			
Building a toll house on the Thull Ghaut.	202	7	2			
Emergent repairs to Panwell Mamledar's Kutcherry	143	0	2			
Annual repairs to travellers' bungalows in the Northern Conkan, for 1849-50.	59	10	10			
Constructing cook rooms and platforms to staging pendalls below the Ghaut.	1,102	9	3			
Constructing three new permanent pendalls at Tanna	3,688	0	0			
Annual repairs to the military buildings, for 1849-50.	158	0	0			
Ditto to work shop, store rooms, and cattle shed, for 1849-50.	53	2	2			
Ditto to civil hospitals and buildings appertaining to them, for 1849-50.	60	0	0			
Ditto to travellers' bungalow and buildings appertaining to it for 1849-50.	46	0	0			
Ditto to the Collector's premises at Tanna, for 1849-50.	198	12	6			
Converting the old Commandant's quarters in the Tanna Fort into a jail hospital	1,843	0	10			
Annual repairs to the Assistant Judge's premises at Tanna, for 1849-50.	388	3	1			
Ditto to the buildings in the Custom Department, for 1849-50.	214	13	0			
Ditto to the church at Tanna, for 1849-50.	182	13	1			
Petty repairs, for 1849-50.	1,001	3	0			
Erecting a new quarter guard and defaulters' room at Tanna.	211	9	0			
Annual repairs to the military buildings at Tanna, for 1850-51.	0	8	7			
Carried forward, Rupees	24,634	13	11	3,26,140	9	0

Names of Works.	Amount.	Total.
	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>
Brought forward, Rupees	24,634 13 11	3,26,140 9 0
Renewing the veranda ceilings of the Collector's official residence at Tannah.	408 2 5	
Re-roofing the Custom-house at Tannah.	289 1 0	
Making new railing to the Khurdee bungalow.	18 7 3	
Annual repairs to travellers' bungalows, for 1849-50.	504 11 7	
Ditto to store room at Bhewndy, for 1849-50	2 8 6	
Providing new tie beam to one of the trusses of the Kussara bungalow	86 12 4	
Ditto ditto ditto	96 0 0	
Replacing bamboo battans, tiles, &c. of the dhurmsalla at Kussara	22 12 0	
Emergent repairs to the Kussara dhurmsalla.	29 1 3	
Fixing panes of glass to the windows of the different travellers' bungalows on the Thull Ghaut Road ..	15 4 8	
Re-making floor, white and blue washing of the travellers' bungalows at Kalhair, Pudgah, Shapoor, Khurde, and Kussara	129 12 0	
Repairing the 1st Assistant Collector's bungalow at Kelwa Mahim	1,233 7 5	
Constructing new gate to the compound of the hospital of the Native Veteran Battalion, at Bhewndy, 1849-50.	47 9 1	
Annual repairs to quarter guard-room and hospital of N. V. Battalion, at Bhewndy, 1849-50.	30 9 6	
Repairing the choonam ridge of the hospital of the Detachment of the Native Veteran Battalion, at Bhewndy ..	1 10 3	
White and yellow washing the hospital of the Detachment of the N. V. Battalion, 1849-50.	45 2 6	
		27,595 13 8
<i>Miscellaneous Charges.</i>		
Making a new cupboard and drawing board for the use of Lieutenant Chapman's Office.	35 10 11	
Rattaning the bottoms of three chairs belonging to the travellers' bungalow, at Kussara ...	1 8 0	
Providing belts to eleven peons of the travellers' bungalows at Kalhair, Pudgah, Shapoor, Khurdee, Kussara, Bassein, Dantewra, Seergaum, Cheenchnee, Dahanoo, and Oomergaum	14 7 0	
		51 9 11
Grand Total, Three lacs, Fifty-three thousand, Seven hundred and Eighty-eight, anna One, and pies Seven..		3,53,788 1 7

*Statement showing the Amount expended by each Officer of the Road and Tank Department, from
the 1st May 1849 to the 30th April 1850.*

Names of Officers.	Roads and Bridges.		Tanks, Wells, and Bunds.		Buildings.		Miscellaneous Charges.		Total.	
	Rs.	a. p.	Rs.	a. p.	Rs.	a. p.	Rs.	a. p.	Rs.	a. p.
Captain Cowper					12,012	4 5	....	....	56,702	0 3
Mr. Armistead					1,890	10 4	....	....	51,167	14 8
Captain Dennis					14,757	8 0	....	....	14,757	8 0
Lieutenant Chapman					58,460	0 9	1,573	5 0	61,449	10 4
" Fuller					17,815	6 10	58	0 0	19,178	11 1
Mr. Scott....					33,189	7 5	1,864	6 5	43,777	2 6
Lieutenant Scott					97,549	14 9	5,427	12 3	1,05,257	6 4
" Trevor					1,497	12 5	....	....	1,497	12 5
Total..	3,17,217	2 4	8,923	7 8	27,595	13 8	51	9 11	53,788	1 7

Return showing the Expense of Engineering and Superintendence, with reference to actual Outlay.

Names of Officers.	Expense of Establishment per annum.		Rate per Cent.
	Rupees.	Expenditure.	
Captain Cowper	17,007	56,702	30 $\frac{1}{2}$
Mr. Arnistead	4,276	51,167	8 $\frac{1}{2}$
Captain Dennis	7,422	14,757	50 $\frac{1}{2}$
Lieutenant Chapman	5,717	61,449	9 $\frac{1}{2}$
" Fuller	8,347	19,178	43 $\frac{1}{2}$
Mr. Scott	9,534	43,777	21 $\frac{1}{2}$
Lieutenant Scott	11,864	1,05,257	11 $\frac{1}{2}$
" Trevor*	3,827	1,497	25 $\frac{1}{2}$

* Has been principally employed on Survey Duty.

Total Expenditure during the Year.....	Rupees 3,53,788
Cost of Establishment do.....	68,054
Average rate per Cent.....	19 $\frac{1}{2}$

(Signed) W. D. GRAHAM, Bt. Captain,
Supt. of Roads and Tanks.

NOTE.—Captain Dennis is Postmaster as well as in Charge of the Nagpoor Dawk Line, and the Allowances drawn by that Officer should not therefore be all debited to the Road and Tank Department, especially as his Engineering duties are confined to one line of works.

(Signed) W. D. GRAHAM, Bt. Captain,
Superintendent of Roads and Tanks.

List of Estimates prepared by the Officers of the Road and Tank Department, and submitted for sanction between the 1st May 1849 and the 30th April 1850.

Estimates.	Amount.
	<i>Rs. a. p.*</i>
<i>Superintendent.</i>	
Estimate of a proposed new road and causeway from the Dysar Bridge, on the Ghorebunder road, to a place called Rai Moordee	1,06,619 0 0
Estimate of a proposed line of mail road from Khalapoor Bridge to Mora Bunder, to connect the old Bombay road..	5,52,502 0 0
<i>Captain Couper.</i>	
Estimate for constructing cook rooms and platforms to Officers' tents for four pendalls	3,120 0 0
Ditto for repairing Phoolshair Palace	1,339 0 0
Ditto for constructing stone rollers	3,100 0 0
Ditto for constructing cook rooms to Copergaum travellers' bungalow	852 0 0
Ditto for widening the road from Kirkee to Dapooree ..	3,476 0 0
Ditto for constructing armracks and shelves to four staging pendalls	1,761 0 0
Ditto for adding bath rooms and necessaries to Lonee travellers' bungalow	752 0 0
Ditto ditto ditto Seroor and Soopa	752 0 0
Ditto for building a new travellers' bungalow at Wurgaum.	3,488 0 0
Ditto for repairing roof and out-houses of Wye travellers' bungalow	634 0 0
Ditto ditto Neera Bridge	2,890 0 0
Ditto ditto Jooneer Aqueduct.....	951 0 0
Ditto for constructing paved drains round the court of the staging pendalls	555 0 0
Ditto for building a new chowkee in the Thulegaum Khind.	429 0 0
Ditto for repairing approaches of the Dapooree Bridge....	2,250 0 0
Ditto for improving the Akhoordee line of road	1,352 0 0
Ditto for repairs to railing of a bridge over Indrawnee River at Ahundee	299 0 0
<i>Mr. Armistead.</i>	
Estimate for erecting six travellers' bungalows between Poona and Indapoor (A)	21,203 0 0
Ditto ditto ditto ditto (B)	16,847 0 0
Ditto ditto ditto ditto (C)	13,460 0 0
Ditto for repairing injury done by floods to the Poona and Patas Road	555 0 0
Ditto for erecting six travellers' bungalows between Poona and Indapoor (D)	12,000 0 0
Ditto ditto ditto ditto (E)....	12,000 0 0
Carried forward, Rupees	7,63,186 0 0

Estimates.	Amount.
	<i>Rs. a. p.</i>
Brought forward, Rupees	7,63,186 0 0
Estimate for widening and rendering safe the approaches to the Wanowree Bridge on the Sholapoor road	286 0 0
Ditto for ramping down the sides of the Patus and Poona new road, while bridges, &c. are in progress, to admit of the line used by carts	197 0 0
Ditto for constructing aqueducts for garden irrigation wherever the new line of road between Poona and Indapoor is an impediment thereto	288 0 0
Ditto for clearing the present track over the Dewah Ghaut, to render it practicable for laden bullocks	500 0 0
<i>Captain Dennis.</i>	
Estimate for new works on the Nagpoor Dawk Line.. ..	5,536 0 0
<i>Lieutenant Chapman.</i>	
Estimate for making approaches and masonry standards to Godavery Flying Bridge	9,306 0 0
Ditto for constructing a new piece of road to supersede that at present in use near Warewarah	9,990 0 0
Ditto for lessening the steepness of the slopes of the portion of the Agra road near Warewarah ..	12,541 0 0
Supplementary estimate for extra work done in the jail compound at Nassick ..	48 14 11
Estimate for providing a wooden ceiling and glass windows to the Egutpooree travellers' bungalow ..	309 0 0
Ditto for widening the verandah of the travellers' bungalow at Egutpooree	394 0 0
Ditto for making the roof of the travellers' bungalow at Egutpooree water-tight, and providing glass windows for the rooms.	308 0 0
Ditto for making the requisite special repairs and improvements in the civil jail at Nassick	724 0 0
Ditto for building a toll-house on the Thull Ghaut	3,610 0 0
Ditto for widening a dangerous steep ascent, and widening the road near Chandore	3,990 0 0
Ditto for paving the lower portion of the ramps of the Kadwa Flying Bridge	652 0 0
Ditto for building a house at Pimpulgaum for Overseers ..	721 0 0
Ditto for improvements and alterations on the Thull Ghaut new road ..	8,678 0 0
<i>Lieutenant Fuller.</i>	
Estimate for constructing cook rooms and platforms for an Officer's tent at Chowke and Panwell ..	2,147 0 0
Ditto for stone rollers for the mail road	400 0 0
Ditto for arm racks and shelves to staging pendalls, do..	963 0 0
Carried forward, Rupees	
	8,24,863 14 11

Estimates.	Amount.
	<i>Rs. a. p.</i>
Brought forward, Rupees	8,24,863 14 11
Estimate for adding bath-rooms and necessities to the travellers' bungalow at Panwell.....	469 10 7
Ditto for constructing a well near the Chowke pendall....	1,004 0 0
Ditto for repairs to Government bungalow and its out-houses at Oorun.....	696 0 0
<i>Mr. Scott.</i>	
Estimate for renewing the deck planking of the horse-boat stationed at the Ghorebunder Ferry....	198 0 0
Ditto ditto the fence surrounding the premises occupied by the Assistant Judge at Tanna.....	961 0 0
Ditto for roughly securing the foundations of the bridges on the new Bhandoop road ..	195 0 0
Rough estimate of the work performed in building 4,041 feet of the new Bhandoop road....	4,948 15 1
Estimate for building a kutcherry for the Sir Carcoon of the Continental Customs and Excise Department at Tanna	2,773 0 0
Ditto for building a branch road to the Poway Estate	38,399 0 0
Rough estimate of the protection mounds proposed for the new Bhandoop road ..	24,926 0 0
Estimate for building a kutcherry for the Sir Carcoon of the Continental Customs and Excise Department at Tanna	2,505 0 0
Ditto for building a branch road between the Poway Estate and the new Bhandoop road ..	10,177 0 0
Ditto for re-roofing the Custom-house at Tanna.	2,465 0 0
Ditto for renewing the veranda ceiling of the Collector's official residence at Tanna ..	947 0 0
Rough estimate for making a foundation of pavement for the new Bandora road..	2,301 0 0
Estimate for removing a salt chowkee from Goglah, and rebuilding it at Bodnaka.	646 0 0
Ditto for building a quarter-guard for the 1st Grenadiers, at Tanna..	1,902 0 0
Ditto for making kar-stone rollers for the metal roads in Salsette ..	498 0 0
Ditto for certain repairs to the Chemboor Causeway	195 0 0
Ditto for fitting up the room in the Fort at Tanna with arm-racks and pegs ..	118 0 0
Ditto for laying down masonry pavement of the Dysur Bridge....	422 0 0
Ditto for building an enclosure wall to the compound of the travellers' bungalow at Tanna	684 0 0
Ditto for putting up boarded weather-frames to the Church at Tanna..	409 0 0
Ditto for repairing the premises occupied by the Assistant Judge at Tanna....	4,010 0 0
Ditto for building parapets to and coping the wing-walls	
Carried forward, Rupees	9,26,713 8 7

Estimates.		Amount.		
		<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Brought forward, Rupees		9,26,713	8	7
of the drain built on the new Bandora road, leading to the Hill of Senhora DeMonte		426	0	0
Estimate of the improvement proposed to the Hill of Senhora DeMonte at Bandora, in connection with the new road now built at that place.		11,558	0	0
Ditto for putting up boarded weather-frames to the Church at Tanna... ..		375	0	0
Ditto of the improvements proposed to the Hill of Senhora DeMonte at Bandora		1,975	0	0
Ditto ditto ditto		1,854	0	0
Ditto ditto ditto		6,060	0	0
Ditto for building a branch road between the Poway Estate and the new Bhandoop road.		7,770	0	0
Ditto for putting the Persick road in a thorough state of repair..		3,765	0	0
Ditto for building an enclosure wall to the compound of the travellers' bungalow at Tanna		422	0	0
Ditto for re-roofing the Custom-house at Tanna ..		3,286	0	0
Ditto for additional accommodation required for the head quarters of the 1st Grenadiers, stationed at Tanna.		2,661	0	0
Ditto for building Lines for the several parties of the Police employed on the Island of Salsette		2,404	0	0
<i>Lieutenant Scott.</i>				
Estimate for constructing two wells near the village of Kussara, with plan ..		2,092	0	0
Ditto for constructing a bridge over the nullah which divides the town of Bhewndy from that of Nizam-poor, with plan		4,216	0	0
Ditto for making a deck with railing for the new horse-boat for the Colsette Ferry		414	0	0
Ditto for constructing a drain across the Rurtoonda River, with plan..		4,635	0	0
Ditto for constructing a chiselled stone pavement of six feet width round the well at Kussara..		365	0	0
Ditto for facing on the inner side of the bund of the Kussara Tank		341	0	0
Ditto for making a bullock track leading from the village of Kussara and the tank at that place ..		215	0	0
Ditto for a new chair for the travellers' bungalow at Khurdee ..		6	0	0
Ditto for making certain improvements to the Colsette Ferry, with three plans		1,70,497	0	0
<i>New Line of Road between Kussara and Khurdee.</i>				
Estimate for improving the portion of the old road between the foot of the Thull Ghaut and commencement of the 1st Division		14,577	0	0
Ditto for 1st Division		43,298	0	0
Ditto for 2nd Division		1,01,054	0	0
Carried forward, Rupees		13,10,979	8	7

Estimates.		Amount.		
		<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Brought forward, Rupees		131,097	8	7
Estimate for making stone rollers for the use of the mail road.		600	0	0
Ditto for constructing addition to the Mamledar's Kutcherry at Moerbaur, with plan		2,129	0	0
Ditto for additions to the Mahalkurrie's Kutcherry at Kenowlee		1,647	0	0
Ditto for rebuilding the quarter-guard of the Native Veterans Battalion, at Bhewndy		406	0	0
Ditto for repairing the ferry-boat at Oomergaum		559	0	0
Ditto ditto at Dahano		519	0	0
Ditto for providing new tie-beam to one of the trusses of Kussara travellers' bungalow		379	0	0
Ditto ditto ditto Pudgah ditto		379	0	0
Ditto for replacing bamboo battens, tiles, &c. for the Dhurmsalla at Kussara		91	0	0
Ditto for emergent repairs to the Kussara Dhurmsalla		43	0	0
<i>Lieutenant Trevor.</i>				
Estimate for a proposed new line of road from Khurdee to Shahpoor ..		1,43,384	0	0
Ditto for annual repairs to roads and bridges, &c. for 1850-1851		1,21,342	0	0
Ditto for annual repairs to travellers' bungalows and buildings in the General, Military, Territorial, Judicial, and Ecclesiastical Departments, for 1850-51.		7,032	0	0
Grand Total....		15,88,889	8	7

(Signed) W. D. GRAHAM, Brevet Captain,
Superintendent of Roads and Tanks.

Statement shewing the Amount expended on Public Works by the Road and Tank Department, from the year 1841-42 up to the present period, as recorded in the Engineers' Reports published by order of Government.

Camp Nassick, 3rd April 1851.

Year.	No. of Assistants.	Amount Expended.			Cost of Superintending.		
		<i>Rs.</i>	<i>a.</i>	<i>p.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
1841-42	8	1,76,108	0	0	79,260	0	0
1842-43	8	1,24,914	0	0	79,504	0	0
1843-44	7	1,27,814	0	0	71,944	0	0
1844-45	7	1,27,044	0	0	72,427	0	0
1845-46	8	1,96,357	0	0	52,572	0	0
1846-47	8	3,14,795	0	0	58,663	0	0
1847-48	8	3,09,179	0	0	66,061	0	0
1848-49	7	2,83,158	0	0	58,690	0	0
1849-50	8	3,53,788	0	0	68,054	0	0

(Signed) W. D. GRAHAM, Brevet Captain,
Superintendent of Roads and Tanks.

STATEMENT OF THE EXPENDITURE
IN THE
GARRISON ENGINEER'S DEPARTMENT,
FOR
THE YEAR 1849-50.

Bombay, 1st May 1850.

Names of Works.	Amount.	Total.
	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>
<i>Annual Repairs.</i>		
Annual repairs to the public buildings occupied by troops, &c. in the Castle, Fort George, Garrison, Esplanade, Colaba, and at Out-posts... ..	13,440 11 3	
<i>Petty Repairs.</i>		
Petty repairs to the public buildings occupied by troops, &c. in the Castle, Fort George, Garrison, Esplanade, Colaba, and at Out-posts	9,362 12 6	
<i>Certain Works.</i>		22,803 7 9
Sinking a well outside the tank in Fort George.	215 9 10	
Supplying with water the troops quartered in Colaba, by laying down pipes from the wells in the neighbourhood of the Cooperage.	565 15 3	
Despatching 3,000 teak rafters to Kurrachee from Negra Bunder, six miles below Nagotna	35 13 6	
Draining the native Lines at Boree Bunder ..	625 0 0	
Fitting with glass windows the quarters occupied by the Adjutant of the 22nd Regiment N. I., at Boree Bunder ..	29 12 0	
Constructing a tank and oven for copperising timber	169 4 0	
Re-building charcoal cylinder furnace, Mazon powder works	336 12 6	
Experiment of copperising wood for keeping away the white ants which at present infest the Grand Arsenal.. ...	47 14 1	
Carried forward, Rupees	2,026 1 2	22,803 7 9

Names of Works.	Amount.			Total.		
	<i>Rs.</i>	<i>a.</i>	<i>p.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Brought forward, Rupees	2,026	1	2	22,803	7	9
Repairing the quarters of the Assistant Surgeon to the European General Hospital..	636	12	6			
Cleaning out the Fort ditch, and caulking the sluice gates	107	9	4			
Repairs to the cudjan porch, mat frames, &c., to the premises occupied by the Medical Storekeeper at Colaba	20	0	0			
Constructing the veranda for the quarters of the Serjeant Major of the Depôt, at Colaba.	109	0	0			
Renewing the boarded floor of the light ammunition room in the Grand Arsenal .. .	339	4	0			
Additions and alterations to the Government Printing Press buildings, to adapt them to the purposes of a Depôt and Government Dispensary	8,226	0	0			
Providing a residence for the Superintendent of the Government Cooperage....	371	0	0			
Pulling down and rebuilding the quarters of the Staff Serjeant in Fort George .. .	1,166	0	0			
Constructing two bathing rooms, and making certain improvements to the hospital privy of the 2nd Battalion Artillery, at Fort George.	365	0	0			
Cleaning the ditches round the Fort George Barracks .. .	450	0	0			
Constructing iron net-work over the windows of the solitary cells, and adding a new room to the quarter-guard of the barracks occupied by H. M.'s 22nd Regiment, at Colaba.	950	0	0			
Constructing a pallisade railing with a gate, to prevent the people entering the Grand Arsenal .. .	315	0	0			
Repairs to the cook house at the north-east end of the Barracks, at Colaba .. .	244	0	0			
Glazed windows and side weather-frames, also repairing plank shutters of windows for the 2nd Battalion Artillery Hospital in Fort George .. .	290	0	0			
Repairing a part of the road leading to the Hospital at Colaba .. .	173	0	0			
Constructing a brick wall to the out-office No. 119, at Colaba .. .	8	0	0			
Re-constructing the covered way from the barracks to the privies, at Colaba .. .	182	0	0			
Widening the drains, and constructing a new cess-pool at the entrance of the Castle .. .	165	0	0			
Constructing a drain for carrying away the wastage water from the Doctor's quarters of the European General Hospital..	8	6	0			
Repairs to the fire-engine shed....	630	0	0			
Carried forward, Rupees	16,782	1	0	22,803	7	9

Names of Works.	Amount.			Total.		
	<i>Rs.</i>	<i>a.</i>	<i>p.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Brought forward, Rupees	16,782	1	0	22,803	7	9
Repairs to the roof and floor of the stone pavement of the buildings at Butchers' Island	800	0	0			
Placing wire gratings over the windows of the solitary cells at the Queen's Troops Depôt, at Colaba	30	0	0			
Copperising the wood of the boarded floor of the light ammunition room in the Grand Arsenal	31	0	3			
Alterations at the Grand Arsenal	23	0	0			
Alterations to the store-room No. 1, in the Audalut warehouse, under the Deputy Commissary General's Office	88	0	0			
Repairs to the quarters No. 1, on the Esplanade.	50	0	0			
Constructing a depository for patterns of casting in the Gun Carriage Department	75	0	0			
Breaking the wall, and fixing a door between the two rear rooms of the quarters occupied by the Adjutant 2nd Battalion Artillery, in Fort George	25	8	0	17,909	9	3
<i>Buildings.</i>						
Preparing doors and windows for the buildings appertaining to the new European barracks, at Hyderabad, in Seinde	566	5	0			
Preparing the wood-work required for the Horse Artillery buildings, at Kurrachee	5	0	1			
Supplying wood-work required for the roof of the canteen, library, and quarter guard to the new European barracks, at Hyderabad, in Seinde	14	6	1			
Preparing the frame-works for doors and windows of the new temporary pendalls, at Kurrachee	96	3	4			
Constructing a cook-house for the Serjeant Major, Marine Battalion Native Infantry	68	0	0			
Constructing a new ball-casting shed in the Grand Arsenal	1,550	0	0	2,299	14	6
Levelling the Esplanade, supplying water to the dhobeas, annual repairs to the Dho-beewada, and expenses in collecting the Esplanade fees, &c.	....			9,421	13	6
Amount paid to artificers and labourers engaged for or returning from Out-Stations, &c.	....			7,816	15	10
Total, Rupees sixty thousand, two hundred and fifty-one, annas twelve, and pies ten				60,251	12	10

(Signed) J. H. G. CRAWFORD, Captain,
Garrison Engineer, Presidency.

Statement of the Sums expended by the Garrison Engineer at the Presidency, from 1st May 1849 to 30th April 1850.

Names of Officers.	Annual and Petty Repairs.	Certain Works.	Buildings.	Expended. from Espla- nade Fund.	Expended for Artificers and Labourers en- gaged for or returning from Out-sta- tions.	Total.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Captain H. J. Margary and Captain J. H. G. Crawford, Garrison Engineers at the Presidency	22,803 7 9	17,909 9 3	2,299 14 6	9,421 13 6	7,816 15 10	60,251 12 10

Statement showing the Cost of Engineering and General Superintendence of the Garrison Engineer's Department, for the above period.

Names of Officers.	Expense of Establishment per Annum.	Expenditure.	Rate per Cent.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Captain H. G. Margary and Captain J. H. G. Crawford, Garrison Engineers at the Presidency	14,332 6 10	60,251 12 10	23 12 0

(Signed) J. H. G. CRAWFORD, Captain,
Garrison Engineer at the Presidency.

Statement of the Expenditure in the Civil Architect's Department, for the year 1849-50.

Bombay, 1st May 1850.

Names of Works.	Amount.	Total.
	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>
GENERAL DEPARTMENT.		
<i>Annual and Petty Repairs.</i>		
Annual repairs to the buildings in the General Department, for 1849-50	6,901 7 0	
Petty repairs to the buildings in the General Department	2,330 0 2	
		9,231 7 2
<i>Certain Works.</i>		
Certain alterations and repairs to the detached buildings of the Secretariat used by the Judicial Department	700 0 0	
Certain alterations and repairs to the Jamsetjee Jejeebhoy Hospital	2,359 2 0	
Alterations and repairs required to the Jamsetjee Jejeebhoy Hospital	91 0 0	
Putting up teak trellis partitions in the new General Post Office	145 0 0	
Placing lamps and affixing moveable chain on the Town Custom Bunder	902 0 0	
Making glass and venetian windows to the room of the Section Writers of the Revenue and Financial Departments in the Secretariat premises	530 0 0	
Putting two tablets in the Grant Medical College	196 5 0	
Opening an extra door to the coach-house, and making one of the stalls into a box, at the Government House at Malabar Point	24 0 0	
Additional works at the Government House at Malabar Point	67 11 0	
Alterations to the Lunatic Asylum, by cutting a door-way through a wall, and fixing a door at the back of an out-house in which an European keeper lives	14 9 0	
Putting in a proper state of repair the Government House at Parell	2,100 0 0	
Additional works in the kitchen at the Government House at Parell	55 14 0	
Putting up a range of huts for the use of the ghorrawallas at the Government House at Parell	260 0 0	
Constructing temporary sheds at Malabar Point, for the use of followers of his Highness the Guikwar	158 5 1	
Carried forward, Rupees	7,603 14 1	9,231 7 2

Names of Works.	Amount.			Total.		
	<i>Rs.</i>	<i>a.</i>	<i>p.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Brought forward, Rupees	7,603	14	1	9,231	7	2
Fixing in the Parell kitchen a smoke-jack, arrived from England	202	8	0			
Making steps to the presses in the General Record room of the Secretariate	70	14	0			
Alterations and repairs to the road to the Powder-works through the village of Matarpacady, at Mazagon	500	0	0			
Opening two extra arches at the doorway, and furnishing wooden steps to the same, also making three large presses for glass-ware, &c. at the Government House at Parell	425	5	10			
Erecting a porch to the door of the bungalow at Parell of the Military Secretary to the Right Honorable the Governor	165	0	0			
Oneteak-plankshelf for saddlery in the 2nd Aide-de-Camp's stable, and one plank cover for retaining wall of a cistern in the garden bungalow at the Government House at Parell.	33	11	0			
Making holes in the parapet walls of certain wells on the Island, for the introduction of the suction-pipes of fire-engines	15	15	6			
Certain improvements to the buildings of the Jamsetjee Jejeebhoy Hospital, and its compound	1,900	0	0			
Certain improvements in the compound of the Jamsetjee Jejeebhoy Hospital	467	2	4			
Erecting a considerable portion of new railing, and making other improvements to the Government grounds at Parell	25	0	0			
				11,409	6	9
<i>Buildings.</i>						
Constructing quarters for the Assistant and Apprentices attached to the Jamsetjee Jejeebhoy Hospital	1,782	14	0			
Constructing a permanent shed in the compound of the Lunatic Asylum, at Colaba	1,200	0	0			
				2,982	14	0
JUDICIAL DEPARTMENT.						
<i>Annual and Petty Repairs.</i>						
Annual repairs to the buildings in the Judicial Department, for 1849-50	1,758	9	0			
Petty repairs to the buildings in the Judicial Department	1,355	12	6			
				3,114	5	6
<i>Certain Works.</i>						
Adding three windows to the Picket-chowkey on the Esplanade, and constructing a tiled shed at the Mazagon Police Office	111	0	0			
Carried forward, Rupees	111	0	0	26,738	1	5

Names of Works.	Amount.	Total.
	<i>Rs. a. p.</i>	<i>Rs. q. p.</i>
Brought forward, Rupees	111 0 0	26,738 1 5
Covering over and enclosing by means of teak plank the cog-wheels of the treadmills in the County Jail.	52 2 0	
A new window, with iron bars, one iron grating door in Moonbadavee Chowkey, and one small back door for a privy ..	40 14 0	204 0 0
<i>Buildings.</i>		
None.		
TERRITORIAL DEPARTMENT.		
<i>Annual and Petty Repairs.</i>		
Annual repairs to the buildings in the Territorial Department, for 1849-50..	2,673 9 0	
Petty repairs to the buildings in the Territorial Department	1,780 2 9	4,453 11 9
<i>Certain Works.</i>		
Putting the wheel-crane on the Town Custom-house Wharf in an efficient state of repair	703 5 0	
Making repairs to the wooden tenders of the hoisting-places of the Town Custom-house Bunder	583 12 0	1,287 1 0
<i>Buildings.</i>		
None.		
ECCLESIASTICAL DEPARTMENT.		
<i>Annual and Petty Repairs.</i>		
Annual repairs to the buildings in the Ecclesiastical Department, for 1849-50.	240 0 0	
Petty repairs to the buildings in the Ecclesiastical Department	287 11 0	527 11 0
<i>Certain Works.</i>		
Repairs to the Parsonage House....	42 14 0	
Thirty kneeling boards for the Roman Catholic Chapel at Colaba	63 4 0	106 2 0
Carried forward, Rupees	....	33,316 11 2

Names of Works.	Amount.	Total.
<i>Brought forward, Rupees</i>	<i>Rs. a. p.</i>	<i>Rs. a. p.</i> 33,316 11 2
<i>Buildings.</i>		
None.		
MARINE DEPARTMENT.		
<i>Annual and Petty Repairs.</i>		
Annual repairs to the buildings in the Marine Department, for 1849-50.	2,279 9 0	
Petty repairs to the buildings in the Marine Department	1,754 11 6	
<i>Certain Works.</i>		4,034 4 6
Remedying the dangerous state of the Apollo Pier..	132 15 0	132 15 0
<i>Buildings.</i>		
Constructing a building at the Observatory for the reception of the electrometrical apparatus lately received from England ..	563 2 0	
Constructing a look-out house at the Castle, and one at Mahaluxumee; also a look-out Lascar's house at Malabar Point..	691 9 4	
Constructing a tiled shed for the peons employed to watch the Coal Depôt near the Pilot Bunder, at Colaba.	150 0 0	
Constructing a cook-room for the use of the Gunner at the Light House at Colaba	188 0 0	
Grand Total, Rupees Thirty-nine thousand and seventy-six, and Annas ten..		1,592 11 4 39,076 10 0

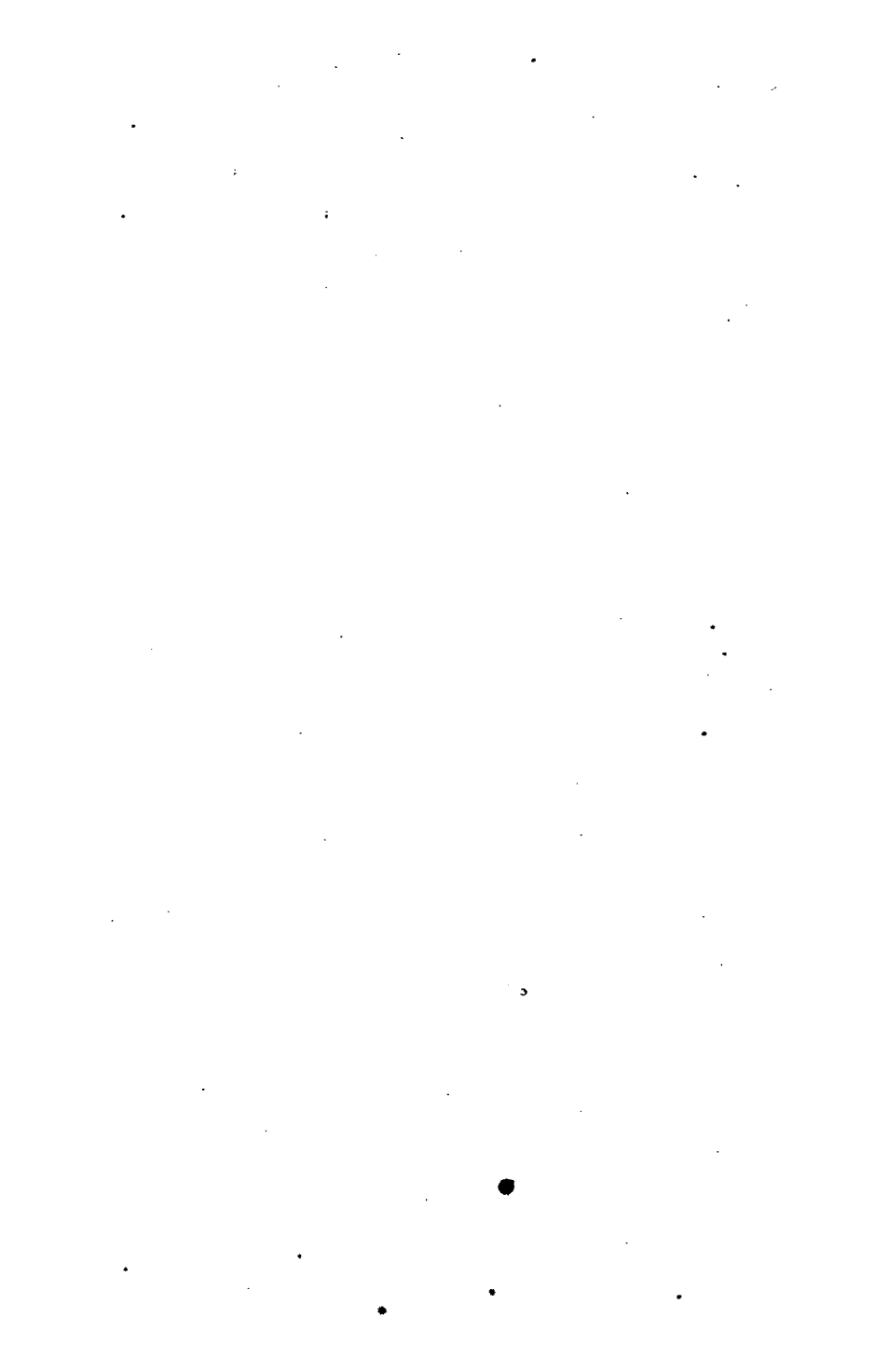
*Statement of the Sums expended by the Civil Architect at the Presidency, from 1st May 1849
to 30th April 1850.*

Names of Officers.		Annual and Petty Repairs.	Certain Works.	Buildings.	Total.
Captain H. J. Margary, and Captain J. H. G. Crawford, Civil Architects.		<i>Rs. a. p.</i>	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>
General Department	....	9,231 7 2	11,409 6 9	2,982 14 0	23,623 11 11
Judicial ditto ..	....	3,114 5 6	204 0 0		3,318 5 6
Territorial ditto ..	....	4,453 11 9	1,287 1 0		5,740 12 9
Ecclesiastical ditto ..	....	527 11 0	106 2 0		633 13 0
*Marine ditto ..	....	4,034 4 6	132 15 0	1,592 11 4	5,759 14 10
Grand Total		21,361 7 11	13,139 8 9	4,575 9 4	39,076 10 0

*Statement showing the Cost of Engineering and General Superintendence of the Civil Architect's
Department, for the above period.*

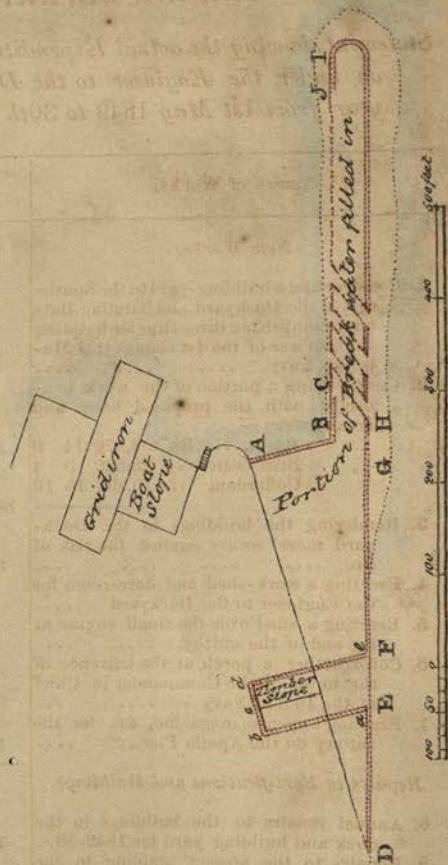
Names of Officers.	Expense of Establishment per Annum.	Expenditure.	Rate per Cent.
	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>	
Captain H. J. Margary, and Captain J. H. G. Crawford, Civil Architects at the Presidency.	16,695 0 0	39,076 0 0	42½

(Signed) J. H. G. CRAWFORD, Captain,
Civil Architect at the Presidency.



Sketch of the Break Water, shewing the portion completed to the 30th April 1850.

	AB		BC		DE		EF		FG		GH		IJ		ab		cd		de	
	Length.	Height.	Length.	Height.	Length.	Height.	Length.	Height.	Length.	Height.	Length.	Height.	Length.	Height.	Length.	Height.	Length.	Height.	Length.	Height.
Blad por- tion com- pleted to the 30 th April 1850	80 22	45 22	146 19	47 43	279 19	28 10	286 6	52 5	502 19	221 20	20 17									



The Red line shows the upper edge of the Retaining wall.

No. I.

MARINE DEPARTMENT.

Statement showing the actual Expenditure upon works carrying on under the Engineer to the Dockyard, for the official year from 1st May 1849 to 30th April 1850.

Names of Works.	Amount.	Total.
<i>New Works.</i>	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>
1. Constructing a building-yard to the South-east of the Dockyard and Saluting Battery, comprising three slips for building ships of war of the 1st class of Her Majesty's Navy.	521 2 4	
2. Constructing a portion of the work connected with the proposed basin and breakwater :—		
Basin.....Rs. 2,070 14 9		
Breakwater .. 23,920 3 4		
Cofferdam .. 10,498 15 10		
	36,490 2 4	
3. Rendering the buildings in the Dockyard more secure against the risk of fire	3,876 7 4	
4. Erecting a work-shed and store-room for the Engineer to the Dockyard	673 9 3	
5. Erecting a shed over the small engine at the end of the smithy.	267 1 4	
6. Constructing a porch at the entrance of the house of the Commander in Chief of the Indian Navy..	274 0 0	
7. Erecting expense magazine, &c. for the battery on the Apollo Pier	2,836 5 4	
		44,938 11 11
<i>Repairs to Fortifications and Buildings.</i>		
8. Annual repairs to the buildings in the dock and building yard for 1849-50..	1,990 0 0	
9. Repairs to the present stabling in the Indian Naval Storekeeper's premises..	361 5 4	
10. Converting the ground floor of the building lately occupied as a sail-loft into a store-room	590 0 10	
11. Levelling the floor for the reception of the iron tank for the Indian Navy Storekeeper's yard..	177 0 4	
Carried forward, Rupees	3,118 6 6	44,938 11 11

Names of Works.	Amount.			Total.		
	<i>Rs.</i>	<i>a.</i>	<i>p.</i>	<i>Rs.</i>	<i>a.</i>	<i>p.</i>
Brought forward, Rupees	3,118	6	6	44,938	11	11
12. Repairing the mast shed, several of the posts having sunk.. . . .	236	3	8			
13. Removing the railing that stands between the Superintendent's Office and the Rampart	126	5	10			
14. Making and fitting wooden rollers to the stone slope on one side of the grid-iron, for the purpose of more readily hauling up and launching the Governor's bunder boat.. . . .	80	11	10			
15. Erecting the cudjan shed over the new steamer "Zenobia".. . . .	2,345	0	0			
16. Emergent and petty works and repairs ..	1,025	9	7			
				6,932	5	5
Total, Rupees				51,871	1	4

(Signed) C. W. TREMENHEERE, Captain,
Engineer to the Dockyard.

Bombay, Dockyard, Engineer's Office, 1st May 1850.

No. II.

MARINE DEPARTMENT.

Statement showing the Cost of Engineering in the Marine Department under the Engineer to the Dockyard, from 1st May 1849 to 30th April 1850.

	Amount of Es- tablishment.		Total Amount of Establishment.		Expenditure.		Rate per Cent.
	Rs.	a. p.	Rs.	a. p.	Rs.	a. p.	
Lieutenant and Brevet Captain P. L. Hart's Staff Pay, for Marine and Steam Departments, from the 1st May 1849 to the 8th January 1850....	4,954	13 4					
Lieutenant F. W. Marriott's Staff Pay, for Marine and Steam Departments, from 9th January to the 17th March 1850.	687	1 4					
Captain C. W. Tremenhoe's Staff Pay, for Marine and Steam Departments, to the 30th April 1850.	870	15 4					
Establishment from 1st May 1849 to the 30th April 1850..	3,913	14 8	10,326	12 8	51,871	1 4	19½

(Signed) C. W. TREMENHEERE, Captain,
Engineer to the Dockyard.

Bombay, Dockyard, Engineer's Office, 1st May 1850.

No. 3089 of 1850.

GENERAL DEPARTMENT.

To

THE SECRETARY TO THE MILITARY BOARD,

Bombay.

SIR,

I have the honor to forward the Annual General Report of the Proceedings of the Department of Public Works in the Southern Provinces during the official year 1849-50.

2. The total expenditure from the 1st May 1849 to the 30th April 1850 in the Military and Civil Departments is as follows :—

Total Expenditure in the Military and Civil Departments of the several Executive Officers of the Public Works Department in the Southern Provinces.

Names of Divisions.	Amount expended on each.	Amount of Superintendence.	Superintendence percentage.
POONA.	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>	
MILITARY DEPARTMENT.			
Repairs	18,462 4 2		
Annual Repairs	9,298 4 4		
New Works	19,583 3 7		
Military Department.....Total	42,343 12 1		
CIVIL DEPARTMENT.			
Repairs	4,514 0 6		
Annual Repairs	4,907 4 0		
New Works	11,579 8 8		
Civil Department.....Total	21,000 13 2		
Military Department.....Total	42,343 12 1		
Grand Total	63,344 9 3	18,570 12 9	29½

Names of Divisions.	Amount expended on each.	Amount of Superintendence.	Superintendence percentage.
AHMEDNUGGUR.			
	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>	
MILITARY DEPARTMENT.			
Repairs	2,315 4 5		
Annual repairs	4,743 12 0		
New works ..	7,173 4 8		
Military Department Total	14,232 5 1		
CIVIL DEPARTMENT.			
Repairs	3,338 12 10		
Annual repairs	1,056 14 3		
New works ..	3,000 10 3		
Civil Department Total	7,396 5 4		
Military Department Total	14,232 5 1		
Grand Total ..	21,628 10 5	5,736 11 2	26½
BELGAUM.			
MILITARY DEPARTMENT.			
Repairs.. ..	2,175 14 11		
Annual repairs	5,301 8 8		
New works ..	8,517 2 9		
Military Department Total	15,994 10 4		
CIVIL DEPARTMENT.			
Repairs	2,701 14 11		
Annual repairs	10,735 14 10		
New works ..	7,847 3 0		
Civil Department Total	21,285 0 9		
Military Department Total	15,994 10 4		
Total ..	37,279 11 1		
Deduct, for Extra Establishment.	1,551 2 2		
Grand Total ..	35,728 8 11	12,371 5 2	40½
DHARWAR.			
MILITARY DEPARTMENT.			
Repairs	315 2 0		
Annual repairs	35 9 6		
New works ..	0 0 0		
Military Department Total	350 11 6		

Names of Divisions.	Amount expended on each.	Amount of Superintendence.	Superintendence percentage.
CIVIL DEPARTMENT.	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>	
Repairs	14,317 7 11		
Annual repairs	2,054 2 9		
New works	30,620 11 3		
Civil Department.....Total	46,992 5 11		
Military Department.....Total	350 11 6		
Grand Total.. . . .	47,343 1 5	12,783 0 7	27
KOLAPORE.			
MILITARY DEPARTMENT.			
Repairs	0 0 0		
Annual repairs	2,967 7 11		
New works	1,284 8 11		
Military Department.....Total	4,252 0 10		
CIVIL DEPARTMENT. *			
Repairs	0 0 0		
Annual repairs	103 0 4		
New works	0 0 0		
Civil Department.....Total	103 0 4		
Military Department.....Total	4,252 0 10		
Grand Total.. . . .	4,355 1 2	868 3 3	19½
SHOLAPORE.			
MILITARY DEPARTMENT.			
Repairs	0 0 0		
Annual repairs	1,950 0 0		
New works	815 0 8		
Military Department.....Total	2,765 0 8		
CIVIL DEPARTMENT.			
Repairs	0 0 0		
Annual repairs	204 10 0		
New works	3,414 11 10		
Civil Department.....Total	3,619 5 10		
Military Department.....Total	2,765 0 8		
Grand Total.....	6,384 6 6	1,284 0 0	20½

Names of Divisions.	Amount expended on each.	Amount of Superintendence.	Superintendence percentage.
KHANDEISH.	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>	
MILITARY DEPARTMENT.			
Repairs	360 0 2		
Annual repairs	331 1 4		
New works	785 12 9		
Military Department.....Total	1,476 14 3		
CIVIL DEPARTMENT.			
Repairs	5,307 11 2		
Annual repairs	9,533 12 11		
New works	43,159 0 11		
Civil Department.....Total	58,000 9 0		
Military Department.....Total	1,476 14 3		
Grand Total....	59,477 7 3	31,525 0 11	53½
ASSEERGHUR.			
MILITARY DEPARTMENT.			
Repairs	657 12 11		
Annual repairs	94 13 0		
New works	170 0 0		
Military Department.....Total	922 9 11		
CIVIL DEPARTMENT.			
None.			
Military Department.....Total	922 9 11		
Grand Total.. . . .	922 9 11		
DAPOOLIE.			
MILITARY DEPARTMENT.			
Repairs	396 6 4		
Annual repairs	582 7 8		
New works	0 0 0		
Military Department..Total....	978 14 0		

Names of Divisions.	Amount expended on each.	Amount of Superintendence.	Superintendence percentage.
CIVIL DEPARTMENT.	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>	
Repairs	73 8 1		
Annual repairs.. ..	37 2 0		
New works	0 0 0		
Civil Department.....Total	110 10 1		
Military Department.....Total	978 14 0		
Grand Total ..	1,089 8 1	168 0 0	15½
Grand Total, amount of Expenditure	2,40,273 14 11		

3. I beg also to forward Lieutenant Bell's Annual Report of the Proceedings of the Civil Engineer's Department in Candeish, for the official year 1849-50.

I have the honor to be, &c.

(Signed) J. KILNER, Captain,
Acting Suptg. Engineer, S. P.

*Superintending Engineer's Office, S. P.,
Camp, Sattara, 21st November 1850.*

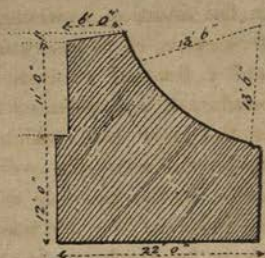
Extract of a Report of the Proceedings of the Department of the Civil Engineer in Candeish, during the Official Year 1849-50.

TERRITORIAL DEPARTMENT.

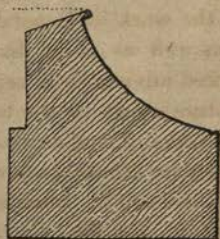
NEW WORKS.—*Constructing the Seerusmeenee Bundarrahs.*—This work was close on its completion at the end of the last official year, and was finished in the month of May 1849, at a total cost of Rs. 9,647-12-2 (nine thousand six hundred and forty-seven, annas twelve, and pies two). It is the first bundarrahs constructed from its foundation by the Engineer Department in the Province, and the effect of the first monsoon upon it was looked forward to with some anxiety, on account of its want of a *rock foundation* in the bed of the river across which it is constructed. The arrangement of the masonry work, &c. on either bank of the river was much the



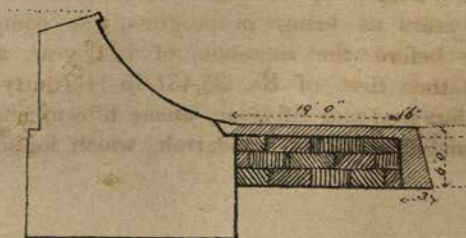
N^o 1.



N^o 2.



N^o 3.



same as had been adopted in modifications of old existing bundarrahs, to prevent the bundarrah wall being outflanked by the river in floods, with the addition, however, in this case, at the mouth of the water-course, of a reservoir and sluice apparatus, to prevent smaller floating rubbish entering the water-course. The main bundarrah wall required to be twelve (12) feet in height above the river bed, which being of a nature likely to be torn up by the water-fall over the crest of the bundarrah during floods, to the possible destruction of the wall, a section (as in diagram No. 1) was considered advisable. The flood appears, by marks made at my request by the villagers, to have risen at times to such a height that seven (7) feet of water was falling over the crest of the bundarrah during the monsoon of 1849, an unusually heavy one, and at the close of the monsoon the water-fall had excavated the upper stratum of the river bed below the bundarrah wall, as seen in diagram No. 2, and some slight injuries had occurred to the pointing, but the work in general had borne the violence of the monsoon as well as could have been wished. It was, however, considered advisable to repair the pointing, and to prevent possible future injury to the bundarrah by the washing away of the river bed soil, and accordingly,

Repairs, &c. to Seerusmeenee Bundarrah were undertaken out of the unexpended balance of the bundarrah work. The pointing repairs were executed, and the excavation in the river commenced to be filled in with dry stone-work of large stones, protected by a "pukka" masonry apron above, and supported by a retaining wall, as shewn in diagram No. 3. The completion of this work, and the effect on it of the present monsoon, may be noticed in the next Annual Report.

Completing the Zeykheira Bundarrah, &c.—This extensive work of irrigation, which has been noticed in the reports of two past years as being in progress, was completed satisfactorily before the monsoon of last year, at a total cost from the first of Rs. 35,451-15-11 (thirty-five thousand four hundred and fifty-one, annas fifteen, and pies eleven). The magnificent old bundarrah, which for some portion of

its length is from twenty (20) to thirty (30) feet in height, and ten (10) feet thickness at top, has been raised, and strongly though roughly coped, for the purpose of securing a larger supply of water in its rear. The mouth of the water-course adjoining the bundarra has been protected by an inner screen wall, and complete sluice apparatus. The water-course is carried for a length of about five (5) miles, through most difficult ground, from the bundarra to the irrigated land, and in its course is carried through three (3) tunnels of considerable length, (built of masonry, and of the pointed Gothic section, and with masonry shafts at proper intervals,) and over three (3) nullahs, by means of arched aqueducts. The water of nullahs on a higher level than the water-course is carried clear over it in four (4) places by means of aqueducts for that purpose, and in three (3) places village roads cross the water-course by means of road bridges, constructed for that purpose; and lastly, where smaller nullahs enter the water-course, or it crosses larger ones nearly on a level with their beds, breast-walls, large and small, twenty (20) in number, protect the bank from injury. The work thus completed satisfactorily affords a fine specimen of the application of the resources of the Engineer Department to the restoration and improvement of an old work of irrigation. It is only to be hoped that a work, on which upwards of thirty-five thousand rupees have been expended by Government from the time it was taken in hand, may not suffer injury from the notorious inattention of the villagers (in whose charge it now is) to the care of all permanent works on the line of their water-courses.

Improvements to the Khutghur Water-course.—This work was noticed and described in the last Annual Report as nearly completed. It was satisfactorily completed, at a cost of Rs. 1,226-7-6 (twelve hundred and twenty-six, annas seven, and pies six), shortly after the commencement of the past official year, and was inspected as completed by me before the monsoon of 1849, and though I have had no opportunity of inspecting it since then, I have no doubt that the work has proved successful, as I have heard nothing to the contrary.

Improvement to the Seerwara Bundarrah.—This work was also nearly completed, and noticed as such in the last Annual Report. I have not seen it since its completion, shortly before the rains of 1849, at a cost of Rs. 513-14-11 (five hundred and thirteen, annas fourteen, and pies eleven), but I have been informed that it has not been at all injured by the monsoon, and that the sluices broken in the bundarrah have proved quite efficacious in removing the long-accumulated deposit from the rear of the bundarrah wall, which is now occupied by a fine sheet of water, and the water-course is plentifully supplied.

Improvements to the Wulwareh Bundarrah.—This work was abandoned after commencement nearly at the close of the official year 1848-49, in consequence of an assault on the works by the villagers of Wurnere, whose bundarrah is lower down the same river, and who were afraid of a deficiency in their supply of water if the Wulwareh Bundarrah, which had hitherto been a leaky “kutchā” dam, was rendered “pukka,” and did not let any water escape through it. The offending parties have been punished, and the work resumed during the past working season, and was nearly completed at the close of the past official year.

Improvements to the Cunnussee Water-course.—The improvements noticed in the last Annual Report as being in progress were satisfactorily completed before the setting in of the monsoon of 1849, at a total cost of Rs. 4,961, (four thousand nine hundred and sixty-one). The aqueduct parapets, which had three times given way, were enabled, by the new section given to them, aided by the important remedy to the evils on the line of water-course by the giving the sides a better slope, to withstand all the floods of the monsoon of 1849, without suffering at all. I visited the locality before the present monsoon, and had the satisfaction of finding that all the remedial measures proposed and executed by me had been perfectly successful.

Constructing a Relieving Sluice near the Aqueduct of the Water-course belonging to the villages of Bhoosnee and Kul-

wan.—This work was noticed in the last Annual Report as commenced only. At a point of the water-course a short distance above the aqueduct, which has twice suffered from floods, a breast-wall has been constructed, with a waste weir and scouring sluice, by which any surplus water, turned off by a screen-wall across the water-course, is carried away into a nullah below, through a cutting made for the purpose. The aqueduct was uninjured by any flood during the monsoon of 1849, possibly because of this safety breast-wall above it, and on my visit to the locality during the past working season, I found it in good order. This work was completed for a total cost of Rs. 250-12-8 (two hundred and fifty, annas twelve, and pies eight).

Repairing the Bundarrah and Water-course of Bhadne.—The nature of the works required to this bundarrah and water-course was described in the last Annual Report. The work was completed satisfactorily under the superintendence of Lieutenannt Jones, for a total cost of Rs. 2,993-1-11 (two thousand nine hundred and ninety-three, anna one, and pies eleven), shortly after the commencement of the official year. I visited the work while in progress, but have not had an opportunity of observing the effect upon it of the monsoon of 1849, immediately following its completion.

Repairing the Bundarrah and Water-course of Muchmull.—This work was described in the last Annual Report. The monsoon of 1849 put a stop to the works shortly after the completion of the bundarrah, with its protecting screen-wall at the mouth of the water-course, and waste weir and sluice apparatus, as modified by me from the sanctioned design. A great portion of the past official year was taken up with the correspondence explanatory of these modifications, and the obtaining sanction to the supplementary estimate required. On visiting the locality towards the close of the past official year, when the works were again in progress, I had the pleasure of finding the bundarrah (which was, if anything, too well and expensively finished, owing to the great sickness and defection among the masons compelling Lieutenant

Jones to employ stone-cutters on the work,) but slightly injured in its coping by the monsoon of 1849, and otherwise in excellent order. Great progress had been made towards the completion of the works by the end of the official year, and they were finished before the monsoon of the present year, and will be duly noticed as such in the next Annual Report.

Repairing the Bundarraha and Water-course of Akheira.—This work was described in the last Annual Report. It was satisfactorily completed under the superintendence of Lieutenant Jones, shortly after the commencement of the past official year. I visited the work while in progress, but have not had an opportunity of observing whether it has in any way suffered from the monsoon of 1849, shortly before which it was completed. The total cost of this work has been Rs. 1,183-8-7 (eleven hundred and eighty-three, annas eight, and pies seven).

Constructing a new Bundarraha at Wuzzur.—This new Bundarraha consists of a “pukka” masonry wall, of small section, thrown across the rocky bed of a small river, and so arranged in plan as to supply water from its rear equally to two (2) water-courses, one on either side of the river, both of which are provided with screen walls at their mouths, waste weirs, and sluice apparatus. The Bundarraha thus takes the place of two “kutchas” dams, originally reconstructed annually by the villagers. The work was nearly completed at the close of the past official year, and will be noticed as completed in the next Annual Report.

ROADS AND BRIDGES.

Roads and Bridges, Agra Line.

Improvement of the Agra Road, from Chandore Ghaut to Scindwa Pass.—The amount of annual sanction for this work is Rs. 12,000 (twelve thousand). The expenditure during the official year 1848-49 was only Rs. 10,284-8-1 (ten thousand two hundred and eighty-four, annas eight, and pie one), being

less than the sanctioned amount ; which the expenditure of the past official year 1849-50 has exceeded, having amounted to Rs. 13,228 (thirteen thousand two hundred and twenty-eight). The improvements carried on and completed during the past official year have been as follows :—

Between Chandore Ghaut and Malligaum.—Nothing has been done for the further improvement of this portion of the line of road. It is complete with bridges and drains, with the exception of the large river, the Girna, close to Malligaum, and a small river, close to Soundanah, where there is a travellers' bungalow, for a bridge across which a design is about to be submitted, as it will exceed the usual cost.

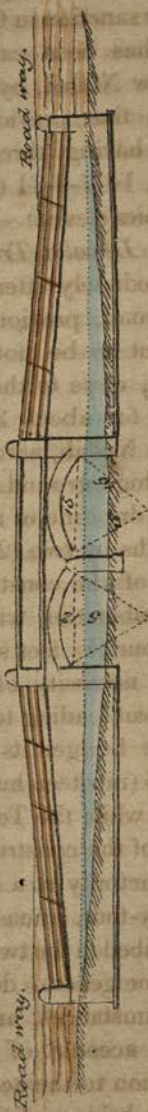
Between Malligaum and Chichulwall Travellers' Bungalows.—Distance eight and a quarter ($8\frac{1}{4}$) miles. A double slab drain has been constructed at the junction of the Agra Road into the branch road from Malligaum Camp, and a single drain, of the same description, not far from the Moosum Ferry, on the Malligaum side. These two drains have been constructed at a total cost of Rs. 56-2-1 (fifty-six, annas two, and pie one). The Moosum River still continues unbridged, and a ferry establishment is kept up, but a design for the construction of a bridge across it, on a new and economical principle, proposed by Mr. T. Edwards, a Surveyor and Draughtsman in my Office, has been sent in to Government, who have expressed great approval of the same, and it is to be hoped that it may shortly be sanctioned, and, if found to be as good as is expected, that many other like constructions may be permitted to be taken in hand. At a point about a mile from the bank of the Moosum River, the road was continually turned into a swamp of black mud, from the washing over it during floods of the soil from the adjacent fields, which are on the same level as nearly as possible with the road. Here a paved dike, eighty (80) feet in length, was considered advisable, and constructed at a cost of Rs. 127-12-6 (one hundred and twenty-seven, annas twelve, and pies six), and has been found effectual in making the road passable at all seasons, and being always covered with soil or mud to the

depth of an inch or two, does not present the objections that paved dips in general do. At the foot of the Durregaum Ghaut a treble slab drain has been constructed, at a cost of Rs. 116-15-11 (one hundred and sixteen, annas fifteen, and pies eleven), and at the top of the ghaut an arched culvert, six (6) feet span, at a cost of Rs. 169-4-4 (one hundred and sixty-nine, annas four, and pies four). Near a well, some distance further on, a double slab drain has been constructed, at a cost of Rs. 90-13-9 (ninety, annas thirteen, and pies nine), and still further on, near the base of a rocky hill, a single slab drain, at a cost of Rs. 43-14-5 (forty-three, annas fourteen, and pies five). The above completes the account of the works of improvement on this portion of the line, which may now be said to be complete in every respect, with the exception of the large bridge across the Moosum, as noticed above.

Between Chickulwall and Arnee Travellers' Bungalows.—Ten and a half ($10\frac{1}{2}$) miles. Descending from the travellers' bungalow at Chickulwall, the road is carried across the Kanolee Nullah by means of a substantial masonry bridge, of two (2) elliptical arches, twenty-four (24) feet span each, constructed by my predecessor, Captain Hart, but from this bridge having an insufficient water-way during heavy floods, the embanked approaches have been carried away in two successive years, (to be noticed below,) and it was therefore recommended to add two (2) arches to the bridge, and construct, at a point a short distance beyond the bridge, a rubble masonry treble culvert, of three (3) arches, each five (5) feet span; and beyond this again, in place of an old non-effective wooden bridge, a single arch bridge, of rubble masonry, fifteen (15) feet span, arc of sixty (60) degrees. This, as a separate sanction, was not approved of at the time of recommendation, but the treble culvert was nevertheless constructed during the last official year out of the annual sanction, at a cost of Rs. 527-9-6 (five hundred and twenty-seven, annas nine, and pies six), and the small bridge, at a cost of Rs. 553-4-8 (five hundred and fifty-three, annas four, and pies eight), besides which an extensive cutting on the up-stream side of

the line of embankment, connecting the old and the two new bridges to protect it, and to conduct the flood water to the proper water-ways, has been made, at a cost of Rs. 408-3-9 (four hundred and eight, annas three, and pies nine). The addition of two arches to the original Kanolee Bridge has lately been sanctioned, in consequence of a repetition of the flood injuries during the monsoon of 1849, and the work will be duly noticed in the next Annual Report. Continuing along the road, several small slab drains are required between Chickulwall and Jhorgah, but no bridge whatever, the last work of this kind required having been constructed during the past official year, at the Puddolee Nullah, about a mile before reaching Jhorgah. This is a rubble masonry bridge, of three (3) arches, each fifteen (15) feet span, and are of sixty (60) degrees breadth, under soffit of arches twenty-one (21) feet, and with a clear roadway of eighteen (18) feet, and has been completed at a cost of Rs. 1386-6-3 (thirteen hundred and eighty-six, annas six, and pies three). Near the town of Jhorgah several drains require to be made, of these one, a treble slab drain was constructed during the past official year, at a cost of Rs. 161-7-10 (one hundred and sixty-one, annas seven, and pies ten). At a distance of two (2) miles beyond Jhorgah are two nullahs, within a short distance of each other, both called Naundun. Two (2) bridges have been constructed here, the first, a bridge of two (2) arches, each fifteen (15) feet span, and are of sixty (60) degrees breadth, under soffit of arches twenty-one (21) feet, and a clear width of roadway eighteen (18) feet, completed at a cost of Rs. 1,541-0-1 (fifteen hundred and forty-one, and pies one), and the second, a larger bridge, of similar design and details, but with three (3) arches, has been completed at a cost of Rs. 1,810-14-2 (eighteen hundred and ten, annas fourteen, and pies two). Between these bridges and the Boree River nothing further has been done in the way of improvement during the past official year, though three or four works will be duly noticed in the next Annual Report, as constructed during the current official year. The design and estimate for the greatly-required bridge





across the Boree River, with its rocky, uneven, cart-destroying bed, was submitted for sanction in October 1848. Beyond the Boree River the road has been carried across a nullah of some size, called the Mhow Nullah, by means of a bridge of the same construction as that previously described as the larger Naundun Bridge, having three (3) arches. It was completed at a cost of Rs. 1417-6-11 (fourteen hundred and seventeen, annas six, and pies eleven).

Between the Arvee and Dhoolia Travellers' Bungalows.—Twelve (12) miles. Immediately after passing the travellers' bungalow at Arvee, the road, previously to the completion of the improvements about to be noticed, entered a nullah, called the Lendee Nullah, close to the village wall of Arvee, and followed its sandy bed for about 300 or 400 yards to its junction with the Toolsee Nullah, across which the road was carried, and regained the high ground. By a deviation from the old line, a high and dry line of roadway has been constructed, crossing the nullahs by two (2) bridges. The Lendee Bridge is of (2) arches, of the construction previously described, but from the combination with the bridge of a long tunnelled arched culvert, four (4) feet span, crossing the road diagonally, and from the necessity of adapting the several wing walls to a branch road leading to the travellers' bungalow immediately from the bridge, its cost when completed amounted to Rs. 1,981-2-6 (nineteen hundred and eighty-one, annas two, and pies six), while the Toolsee Bridge, which is one of three (3) arches, of the construction described above, has been completed satisfactorily at a cost of Rs. 1,354-11-2 (thirteen hundred and fifty-four, annas eleven, and pies two).

As the new bridges described in the two preceding paras. have all been constructed on one general design, differing only in details according to circumstances, and as no others have to be noticed in the further account of the Agra Road, I here beg leave to draw attention to the accompanying sketch, in elevation, of a two (2) arch bridge, of the construction spoken of, the peculiarities of which may be thus described: The parapets of coursed rubble masonry (which are $\frac{1}{4}$ 18 inches in thick-

ness) are surmounted by a semicylindrical coping of cut stone, and terminate at either extremity over the abutments in cylindrical pillars of coursed rubble masonry, two (2) feet in diameter, surmounted by a single large stone, cut to a hemisphere. The wing walls slope from the level of the roadway to that of the spring of the arches. They are made of sufficient length to embrace the whole width of the river in floods, and splay in plan from the line of the parapet of the bridge, according to the base of the slope of the embankment at their termination, where is also a pillar similar to that at the end of the parapet wall, and connecting these is a teak railing, dammered, running up the slope of the wing wall. I believe this to be the kind of bridge best adapted to our nullahs in Can-deish, having abundance of waterway, being well protected from the flank action of spreading floods, and not so liable to injury in its superstructure from ignorant and careless cartmen, and mischievous travellers, as those previously constructed with rounded plaster or flat projecting copings, surmounting parapet walls, or pillars of rectangular plan. I now return to my account of the road improvements.

Between Dhoolia and the River Taptee.—Twenty-six and a half (26½) miles. The only work of improvement carried on in this portion of the line has been the excavation of double drains, at a cost of Rs. 936-3-8 (nine hundred and thirty-six, annas three, and pies eight), for the security of the new piece of road of about four (4) miles in length, constructed by Lieutenant Jones during the previous official year 1848-49 between Soanghier and Nurdanah. Several bridges and drains are required, and will gradually be constructed on the line as far as Nurdanah nearly, but beyond this it were in vain to multiply such works, while the connecting portions of road are merely “fair-weather” roads, and impassable during wet weather. It was stated in the last Annual Report that, for reasons assigned, the construction of the permanent way of good material would cost between Rs. 3,000 and 4,000 a mile, through the valley of the Taptee. This expense must be incurred some day or another, to meet the increasing

demands for improved postal arrangements and despatch, but the small amount of annual sanction will never be found sufficient for this purpose, as it would take seven or eight years, devoting the entire annual sanction on this work, to do what is required.

Between the Taptee River and Scindwa Fort.—Thirty-five (35) miles. Several surveys have been made, and sections taken, preparatory to the improvement of this portion of the line, (which is certainly very bad, principally in consequence of deep black soil in some places, and from its running in a line, as it were entangled, with the course of the River Arnawunttee, on which Sirpoor stands, and which the road crosses several times,) but no work of improvement has been executed during the past official year. Indeed, it would be of little use expending large sums on improvements on this portion of the line of road, while the portions of the line to the south of the Taptee, connecting it with Dhoolia, and to the north, through the Nimar Territory, continued very inferior “fair-weather” roads. However, some improvements are in contemplation, especially near the town of Sirpoor, where a deviation from the existing line may be made with great advantage.

Agra Road, Nimar Line.

48. *Converting into a Fair-weather Road the Line, forty-three (43) miles in length, through the Nimar Territory, between Scindwa and the Nerbudda River.*—This work was commenced at the beginning of the present year, under the superintendence of Mr. Conductor Whittenbury, who was detached from Poona for employment under me for that purpose. I visited the locality, and went over the line with Mr. Whittenbury in April last, and had every reason to be satisfied with his work, so far as it was completed at the time I saw it. The nature of the work required was of course merely the removal of obstructions, the cutting of side drains, and the sloping the approaches into rivers and nullahs. The completed work will be duly noticed in the next Annual Report.

49. Before quitting the subject of the Agra Line, I have to remark that, on two or three occasions during the past official year, reports by travellers from Bombay through Indore have been furnished to the Resident at his request, regarding the bad state of the roads between the Taptee and the Nerbudda, and the Resident, having sent them to our Government, they have eventually been forwarded for my information. Not having acknowledged these reports individually, I would take this opportunity of stating that no traveller can report worse of the portion of the line of road in question than I have done, and am willing to do myself, if comparisons are to be allowed between it and the excellent portion of the line between Nas-sick and Dhoolia, but otherwise it is not worse than might be expected, and the only remedy is an expenditure much larger than has hitherto been sanctioned.

Jhorgah and Nusseerabad Road.

50. *Completing with Bridges the Road between Jhorgah and Nusseerabad.*—This work was noticed at length in the last Annual Report as having been nearly completed at the end of the official year 1848-49. The works were completed in the past official year, by the construction of a bridge at Paldee, with a single arch of eight (8) feet span, arc of sixty (60) degrees, a breadth under soffit of arch seventeen (17) feet, and a clear roadway of fourteen (14) feet, at a cost of Rs. 561-12-1 (five hundred and sixty-one, annas twelve, and pies one,) and in addition to this a further expenditure, amounting to Rs. 172-15-6 (one hundred and seventy-two, annas fifteen, and pies six), in slight repairs to the embankments and roadways of the bridges previously constructed, in consequence of the country-people having cut them up with their carts before the earth-work had had time to consolidate. The total expenditure on this now completed work has been Rs. 15,151-0-4 (fifteen thousand one hundred and fifty-one, and pies four).

*Statement showing the Total Amount of Expenditure in the Engineer's Department in the Province of
Candeish, during the Official Year 1849-50.*

Malligum, Civil Engineer's Office, 1st May 1850.

Names of Works.	Amount expended on each Building, &c.	Total Expenditure on each description of Works, &c.	Total Expenditure in each Department.	Amount of Superintendence of Department.	Per-centage of Superintendence over Expenditure.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	
MILITARY DEPARTMENT.					
<i>New Works.</i>					
Erection of a new store-room for the use of the Detachment of Regulars stationed at Dhoolia	675 6 6				
Annual Repairs	43 8 4				
Petty Repairs	17 13 6	736 12 4			
			736 12 4		
TERRITORIAL DEPARTMENT.					
<i>New Works.</i>					
Constructing the Semusmnee Bundarrah	54 8 1				
Repairs, &c. to the Seerumnee Bundarrah	17 6 2				
Completing the Zeykheira Bundarrah	5,475 1 1				
Improvements to the Khutghur Water-course	24 11 3				
Carried forward, Rupees.	5,571 10 7		736 12 4		

JUDICIAL DEPARTMENT.

New Works.

Constructing a wall to surround the solitary cells and work-sheds of the Dhoolia Jail 2,963 3 2
 Constructing four flights of stone steps to top of cook-rooms, Dhoolia Jail 159 5 9
 Improving the floor of the hospital necessary of the Dhoolia Jail 6 8 0
 Constructing a new flooring to the central guard-room of the Dhoolia Jail 100 1 2
 Arranging the urinary drains, Dhoolia Jail 648 7 11
 Constructing a bridge over the trench dug round the Jail at Dhoolia 101 15 2

Annual repairs

Emergent works and repairs

Petty repairs.. ..

ECCLESIASTICAL DEPARTMENT.

Emergent works and repairs

GENERAL DEPARTMENT.

New Works.

Constructing two new boats for the Girna and Moosum river ferries near Maligaum

Carried forward, Rupees.

2,963 3 2			
159 5 9			
6 8 0			
100 1 2			
648 7 11			
101 15 2			
3,984 9 2			
287 10 4			
335 2 10			
310 15 10			
	4,918 6 2		
		4,918 6 2	
177 9 4			
	177 9 4		
		177 9 4	
175 15 5			
175 15 5			
			26,956 8 4

Names of Works.	Amount expended on each Building, &c.		Total Expenditure on each description of Works, &c.		Total Expenditure in each Department.		Amount of Superintendence of Department.		Per-centage of Superintendence over Expenditure.	
	<i>Rs.</i>	<i>a. p.</i>	<i>Rs.</i>	<i>a. p.</i>	<i>Rs.</i>	<i>a. p.</i>	<i>Rs.</i>	<i>a. p.</i>		
Brought forward, Rupees	175	15 5			26,956	8 4				
Transporting the Kokurmoonda ferry-boat to its destination ..	36	4 4								
Erecting a store-room at Saweldah for the stowage of ropes, &c. belonging to the Taptee Ferry	310	5 7								
Improvements to the travellers' bungalow, Malligaum.	173	5 3								
Ditto ditto Chickwall.	197	7 7								
Making up furniture for the travellers' bungalows at Bodwur and Edulabad	220	13 8								
Making up furniture for the use of the Civil Engineer's Office in Candeish	86	10 2								
Improvement of the Agra Road, from Chandore Ghaut to Scindwa Pass	13,228	0 0								
Converting into a fair-weather road the line, 43 miles in length, between Scindwa and the Nur-budda	3,106	3 9								
Completing with bridges the road between Jhoygah and Nusserabad	734	11 7								
Making up stone rollers for the use of the roads	155	10 6								
Annual repairs	18,425	7 10								
Emergent works and repairs	9,008	4 3								
Petty repairs	3,392	2 7								
	954	14 4								
			31,780	13 0						
					31,780	13 0				

AMOUNT OF SUPERINTENDENCE.

Lieutenant Bell, Civil Engineer...	....	....	....	8,613 0 0
Lieutenant Jones, 1st Assistant Civil Engineer	....	....	....	5,613 0 0
Captain Adams, Acting 2nd Assistant Civil Engineer.	....	....	....	5,786 10 4
Conductor and Supervisor	....	....	....	751 2 5
Surveyors...	....	....	....	5,169 12 5
Office Establishment ..	....	....	....	3,831 15 3
Pioneers ....	....	....	....	1,759 8 6
Total.....				58,737 5 4
				31,525 0 11
				53½ nearly.

(Signed) H. W. B. BELL, Lieutenant,
Civil Engineer.

No. 26 of 1851-52.

GENERAL DEPARTMENT.

To

THE SECRETARY MILITARY BOARD,
Bombay.

SIR,

I have the honor to forward the Annual Report of Works in the Northern Provinces, for the Year ending 30th April 1850.

Statement of the Sums expended by each Officer under the Superintending Engineer, Northern Provinces, from the 1st May 1849 to 30th April 1850.

Names of Officers.	In the Military Department.	In the General Department.	In the Judicial Department.		In the Revenue Department.	In the Territorial Department.	In the Political Department.	In the Ecclesiastical Department.	Total.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	
Lieutenant M. Kennedy, Executive Engineer, Surat Division	1,475 5 3	7,290 1 0	3,289 1 11	2,385 8 10	346 12 9	2 15 6	43 6 0	14,832 3 3	
Lieutenant W. R. Dickin- son, Executive Engineer, Ahmedabad Division ..	15,225 7 3	5,524 0 5	4,977 7 3	5,592 15 2	3,228 13 7	1,323 14 10	290 11 10	36,163 6 4	

Lieutenant G. G. Brown, Acting Executive Engi- neer, Deesa Division ..	32,221 0 7	31 4 8	....	....	....	....	....	148 7 0	32,400 12 3
Captain Taylor, Lieutenant Becher, Captains Morse, and Cristall, Majors of Brigade, in Charge of Public Works, Rajkote..	* 848 5 7	....	....	....	....	826 10 2	17 0 0	1,691 15 9	
Lieutenants J. G. Moyle and G. Skipton, Line Ad- jutants in Charge of Public Works, Bhooj ..	1,205 13 3	....	....	....	....	267 10 9	270 0 1	1,743 8 1	
Total..	50,975 15 11	12,845 6 1	8,266 9 2	7,978 8 0	3,575 10 4	2,421 3 8	768 8 11	86,831 13 8	

Statement showing the Cost of Engineering and General Superintendence of each Officer under the Superintending Engineer, Northern Provinces, from 1st May 1849 to 30th April 1850.

Names of Officers.	Expense of Establishment per annum.	Expenditure.	Rate per Cent.
	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>	
Lieutenant M. Kennedy, Executive Engineer, Surat Division	9,659 7 7	14,832 8 3	65½
Lieutenant W. R. Dickinson, Executive Engineer, Ahmedabad Division ..	11,356 0 10	36,163 6 4	31½
Lieutenant G. G. Brown, Acting Executive Engineer, Deesa Division ..	5,724 2 7	32,400 12 3	17½
Captain Taylor, Lieut. Becher, Captains Morse and Cristall, Majors of Brigade, in Charge Public Works, Rajkote ..	90 0 0	1,691 15 9	5½
Lieutenants J. G. Moyle and G. Skipton, Line Adjutants, in Charge Public Works, Bhooj	158 0 0	1,743 8 1	9½
Total ..	26,987 11 0	86,831 13 8	31½

2. During the official year 1849-50 no works of general or permanent professional interest have been executed, and there do not appear to have been any facts recorded worthy of publication.

3. From the outlay at Surat, Rs. 3,205-11-10 have been expended in constructing the Mucca Gate Bridge. From that at Ahmedabad Rs. 3,762-3-3 have been expended on the local general improvements.

4. Rs. 6,448-6-8 have been expended on the improvement of the Aboo Road, for the sick Europeans on the mountain.

I have the honor to be, &c.,
(Signed) W. B. GOODFELLOW, Major,
Superintending Engineer, N. P.

*Superintending Engineer's Office, N. P.,
Surat, 5th May 1851.*

Statement of Expenditure on Public Works in the Sattara Territory, from the 17th January 1850 to the 30th April 1850.

Description of Works.	Amount expended from January to April 1850.	Total.
GENERAL DEPARTMENT.	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>
<i>Bridges.</i>		
Bridges and drains, ten large and thirty-five small nullahs, on the line of road from Neera Bridge to Sattara	421 5 4	
Ditto on the line of road from Sattara to Mahableshwar	2,795 15 11	
Bridge over the Yenna	663 5 9	
Bridge over the Wusna	200 0 0	
		4,980 11 0
<i>Buildings, Repairs.</i>		
To the old Native buildings at Beejapoor ..	489 0 0	
		489 0 0
<i>Buildings, New.</i>		
Travellers' bungalow at Punderpoor	300 0 0	
Ditto at Wangee	47 0 7	
		347 0 7
<i>Buildings, Repairs Annual, 1849-50.</i>		
Travellers' bungalow, Sattara, 1849-50	92 2 6	
Commissioner's ditto ditto	336 0 0	
		428 2 6
<i>Roads, Repairs Annual, 1849-50.</i>		
From Neera Bridge to Mahableshwar	3,457 7 7	
In the town of Sattara	1,851 6 6	
Watering and preserving trees on the high-ways	1,005 13 5	
		6,314 11 6
<i>Roads, New.</i>		
<i>Between Kurar and Punderpoor.</i>		
Shamgaom Khind	127 4 9	
Kulleedoon Khind		
Seodasheoghur Khind		
<i>Between Sattara and Beejapoor.</i>		
Pulsee Ghant	111 1 0	
Nandree Ghant		
Nagwy Ghant		
Carried forward, Rupees	238 5 9	11,659 9 7

Description of Works.	Amount expended from January to April 1850.	Total.
	<i>Rs. a. p.</i>	<i>Rs. a. p.</i>
Brought forward, Rupees	238 5 9	11,659 9 7
<i>Between Sattara and Punderpoor.</i>		
Triputte Khind	13,697 14 0	
Wurdunghur Khind		
River Krishna, east bank Maholee		
Sattara to Girreb Khind		
Pellien Khind	1,850 6 11	
Prutanb Gunj Road, in the Town of Sattara..	3,222 15 0	
Clearing a road over the Kailghur Ghaut...	1,913 2 5	
Extension of the same from Veir Mall to	1,386 9 8	
Bawurwurree	2,301 3 6	
Pussernee Khind	191 8 0	
Korel Khind	95 12 0	
Constructing a tunnel at Bazaar Peida	2,549 15 7	
		27,447 12 10
TERRITORIAL DEPARTMENT.		
<i>Bunds.</i>		
Wakeshwur Bund, across the Yerla River ..	1,173 0 1	
<i>Tanks.</i>		
Godolee Tank	124 13 1	
Gowlee Tank....	191 12 1	
Memadapoor Tank	832 0 0	
		2,321 9 3
JUDICIAL DEPARTMENT.		
New Jail at Mahableshtar	777 0 0	
		777 0 0
MILITARY DEPARTMENT.		
Military buildings occupied by troops and departments at Sattara	77 12 1	
		77 12 1
Total, Rupees forty-two thousand two hundred and eighty-three, annas eleven, and pies nine		42,283 11 9

Abstract of the Expenditure from January to April 1850.

Works connected with the communications of the Sattara			
Districts	Rs.	37,843 3 4	
Buildings.. . . .	"	2,118 15 2	
Works of irrigation	"	2,321 9 3	
Grand Total as above.....	Rupees	42,283 11 9	

Statement showing the Expense of Engineering and Superintendence, with reference to Actual Outlay.

Names.	Expense of Es- tablishment.		Expenditure.		Rate per Cent.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	
<i>Establishment for January 1850.</i>					
Captain P. L. Hart's salary			401 9 9		
<i>Establishment for February 1850.</i>					
Captain P. L. Hart's salary			830 0 0		
Ditto travelling allowance			280 0 0		
Serjeant Assistant Overseer Mulligan's salary			69 4 9		
Ditto ditto six days' horse allowance			2 2 3		
<i>Establishment for March 1850.</i>					
Captain P. L. Hart's salary			830 0 0		
Ditto travelling allowance			310 0 0		
Serjeant Assistant Overseer Mulligan's pay and allowances			69 4 9		
Carried forward, Rupees			2,792 4 9		

List of the Public Works in hand in the Sattara District at the date of this Report.

Names of Works.	Amounts sanctioned.
GENERAL DEPARTMENT.	
<i>Boats, Ferry.</i>	
Three small boats to be placed at Hulwunk Tamband Meera..	{ Each Boat 625 0 0
<i>Boat, Ferry, repairs annual.</i>	
A double boat on the Krishna, and one on the Yenna	{ Emergent Order.
<i>Bridges.</i>	
Bridges and drains on the line between Neera Bridge and Sattara	General Sanction.
Ditto Sattara and Mahableshwar ..	{ General Sanction.
Bridge over the Yenna ..	3,000 0 0
Bridge over the Wusna	15,000 0 0
	*4,000 0 0
	†4,000 0 0
Bridges and drains between Linibkhind and Panchwur	8,000 0 0
Bridge over the Quoina, near Kurar	†25,000 0 0
<i>Buildings, New.</i>	
Dhurmsala at Poossoosalee	400 0 0
Travellers' bungalow at ditto	600 0 0
Ditto ditto Kurar ..	1,500 0 0
Ditto ditto Punderpoor	1,500 0 0
Ditto ditto Wange ..	600 0 0
<i>Buildings, repairs.</i>	
Old native building at Beejapoor	5,200 0 0
<i>Buildings, repairs annual.</i>	
Travellers' bungalow at Sattara ..	317 0 0
Commissioner's bungalow at Sattara	511 0 0

* Subscribed by Inamdars.

† Sanctioned by Government.

‡ Subscribed by the Punt Prittiniddy, reference made to the Supreme Government.

Names of Works.	Amounts sanctioned.	
	<i>Rs. a. p.</i>	
Native buildings in the town of Sattara	{ Emergent Order.	
<i>Improvements.</i>		
In the town of Sattara, 1850-51	5,000 0 0	
Ditto ditto	426 0 0	
Ditto ditto	760 0 0	
Improving supply of water in the town of Sattara	* 25,000 0 0	
<i>Roads, repairs annual.</i>		
In the Sattara districts, watering and preserving trees on the side of roads	25,218 0 0	
Planting trees	1,000 0 0	
<i>Roads, New.</i>		
<i>Between Kurar and Punderpoor.</i>		
The Shamgaom Khind.. . . .	{ Annual sanction for five years, 10,000 Rs.	
The Kalludoon Khind		
The Sodasheoghur Khind		
<i>Between Sattara and Beejapoor.</i>		
The Pulsee Ghaut		
The Nandree Ghaut		
The Nawguz Ghaut		
<i>Between Sattara and Punderpoor.</i>		
The Tirputtie Khind		
The Wurchinghur Khind		
Mahoolee River bank		
From Sattara to Punb Khind.†		
Peliew Khind	17,000 0 0	
Prutunb Gunj Road, in the town of Sattara.†	7,000 0 0	
Road cleared over the Kailghur Ghaut		
Extension of road to Malcolm Peth :—		
Pussernee Khind	20,000 0 0	
Churrygaom Khind	4,000 0 0	
Ambaolee Ghaut, cutting a trial-path down it	2,000 0 0	
Ambaolee Ghaut .. . . .	|| 35,860 11 9	

* Fees, &c. paid into the Treasury by the Architect to His Highness the late Rajah of Sattara.

† Executed by prisoners, with the aid of a few labourers.

‡ Ditto ditto ditto.

|| Balance of saving paid into the Treasury by the troop pagah.

Names of Works.	Amounts sanctioned.
	<i>Rs. a. p.</i>
Range between the Oormoorree and Quoina Rivers, cutting a trial-path	2,000 0 0
<i>Koombharlee Ghaut, clearing all obstacles, sanctioned.</i>	
* Wurrundur Ghaut	{ *8750 0 0 †8750 0 0
<i>Road from Sattara to Kolapoor, extension of the road sanctioned.</i>	17,500 0 0
Koral Khind	5,000 0 0

TERRITORIAL DEPARTMENT.

	<i>Bunds.</i>	<i>Rs. a. p.</i>
Bund across the Yerla River		9,500 0 0
Pulsee Bund		5,000 0 0
	<i>Tanks.</i>	
Godolee Tank..	{ Commission- er's Letters.	
Gowlee Tank..		
Munadapoor Tank		8,000 0 0

JUDICIAL DEPARTMENT.

	<i>Rs. a. p.</i>
New Jail at Malcolm Peth	6,148 0 0

MILITARY DEPARTMENT.

	<i>Rs. a. p.</i>
Repairs to the buildings at Sattara, occupied, by troops and departments	1,212 0 0

* By the Punt Succbew.

† By Government.

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(Signed) P. L. HART, Captain,

Civil Engineer.



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